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Industrial-strength Linux

Do you dare use Linux where the rubber meets the road? We talk to three IT managers, including Digital Domain's Deryll Strauss, who answer "yes."

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■ Netscape's business customers are wary of what America Online will do with its new acquisition, fearing AOL's focus on consumers and lack of interest in Netscape server products. Sun will take them over, but without any clear statement of direction. Analysts expect AOL to focus solely on Netscape's portal business, not on its attempts at enterprise software products. The deal also may bolster Microsoft's opposition to antitrust charges by showing that it still has competition. Pages 1, 4

■ Electronic trading is threatening to eliminate the "open-outcry" system at major options exchanges, putting the five-year, \$160 million technology upgrade of the American Stock Exchange at risk. Online or changes are overcoming early doubts, putting pressure on traditional exchanges to add electronic services. But the Nasdaq/American Stock Exchange merger and other marriages may simplify their own trading enough to offset the disadvantage. Page 103

■ More than 1,300 IT staffers and contractors participated in our first Online Salary Satisfaction survey — and there are a lot of unhappy campers out there. Though some say media hype has led them to expect more money than companies are willing to offer, others note

that compensation hasn't kept pace with the demands of IT jobs. The good news: Employers are trying to make work environments more flexible in an attempt to create more "friendly" workplaces. Page 84

■ Seen any charges on your hotel bill for toll-free calls lately? The practice isn't illegal, but it does mean you're paying twice to dial in to your own servers or to call the office from the road. If you don't want to pay, try complaining about it. Page 47

■ Celestial Seasonings is preparing its online store for the holidays and hopes the Web site will eventually steal as much as 30% of its print catalog orders. Page 39 Other retailers, from Bloomingdale's to Kmart, also seek to capitalize on holiday Web shoppers with new features and storefronts. Page 43

■ Michelin has gone online to improve customer service. Bib Net — named for Bibendum, the inflated Michelin character — is the backbone to business Web site created so dealers can check their orders and perform other tasks. The goal: building business partnerships. Page 43

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Improve customer service

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AOL deal stirs up antitrust case

► Both sides in trial may use deal as leverage

By Patrick Thibodeau
WASHINGTON

ON THE COURTHOUSE steps, Microsoft Corp.'s chief legal officer, William Neukom, was ebullient. In his view, America Online Inc.'s plan to buy Netscape Communications Corp. is giving antitrust trial judge Thomas Penfield Jackson a real-time lesson about the dynamic software industry.

And Jackson seemed interested. When a Microsoft attorney raised the AOL plan during courtroom questioning of government economist Frederick Warren Boulton, Jackson leaned forward, clasped his hands together and opened his usually half-closed eyes.

But the government may cite the deal as evidence that Microsoft's anticompetitive practices force businesses "to go to extreme lengths to compete," said Lisa Wood, an antitrust attorney at Nutter, McInnery & Fish LLP in Boston. "Both sides can make good use of it."

Just weeks ago, executives at AOL and Netscape testified for the government about Microsoft's abuse of its alleged monopoly power. The announcement last week of their merger plans, coming as it did in the middle of the trial, has raised questions about its timing. But attorneys in both camps said the timing was probably dictated by business decisions, such as those regard-

special trial lawyer for the U.S. Department of Justice.

But David Boies, lead government attorney, said the deal could affect the judge's approach to potential remedies should the government win. "You can't say that [the Netscape/AOL deal] will have no effect," Boies said, adding that the merger provided "no justification" for dismissal.

That's because the implications of AOL's purchase of Netscape won't be as important as any evidence relating to Microsoft's business practices, according to legal experts.

But Microsoft lead attorney John Warden last week said Microsoft will ask for dismissal of the case once government witnesses have finished testifying.

The deal "doesn't change anything about [Microsoft's] contractual arrangements or the appropriateness of whatever leverage they tried to impose," said Tyler Baker, who has worked as an attorney at the Justice Department's Antitrust Division and is now a partner at Carrington, Coleman, Sloman & Blumenthal LLP in Dallas.

MOUNTING EVIDENCE

Indeed, the government last week continued to offer up evidence of Microsoft's alleged pressure tactics. Among the new evidence entered was an agreement with Disney Online Inc. in Burbank, Calif. in 1994. Disney agreed to promote Internet Explorer over any other

browser on Disney Web sites. In exchange, Disney gained placement on Microsoft's Active Desktop.

But Microsoft legal consultant Charles Rule, a former assistant attorney general in the Justice Department's Antitrust Division, said the AOL acquisition reveals the absurdity of the government's claim that Microsoft was about to put Netscape out of business. Why would AOL "be spending \$4 billion to get technology that is about to disappear from the marketplace?" Rule asked.

But the deal goes well beyond browser technology. AOL will gain Netscape's high-traffic Net-center Web portal site.

Asked in court last week by Microsoft attorney Michael Lacombe about what the Netscape/AOL deal says about competition in the software industry, Warren Boulton said, "To the extent that this potential merger is a result of Microsoft's actions in these exclusive contracts... it is unfortunate to see the disappearance of a firm like Netscape." □

MORE ONLINE

For a complete archive of articles on the Microsoft antitrust trial and related links, visit Computerworldonline.com.

www.computerworld.com/more

Possible impact of Netscape/AOL deal on the Microsoft Corp. antitrust case

Microsoft arguments

- The deal shows how new threats can arise quickly in the software industry
- The \$4B purchase price is proof that Netscape wasn't about to fail

Government arguments

- Alliances in the software industry are frequently rearranged
- The deal doesn't change Microsoft's PC operating system monopoly

The \$4.4 billion Netscape/AOL plan has quickly become an important part of Microsoft's trial strategy. "It proves indisputably that no company can control the supply of technology," Neukom declared.

ing current stock prices, instead of the trial itself.

"High-tech deals sort of come together in a flash," said George Cummings, a lawyer at Bruck, Phleger & Harrison LLP in New York and former

Microsoft works to counter Sun's integration tool

By Sharon Gaudin

TO KEEP RIVAL Sun Microsystems Inc. from getting too much of a head start, Microsoft Corp. is creating its own software infrastructure to link network devices.

Microsoft is working on technology to challenge Sun's Jini, a distributed computing technology designed to tie together the upcoming generation of smart devices that range from smart phones to video cameras to printers (CW, July 20).

A source close to the effort confirmed published reports that the work is under way "across most departments" at Microsoft. "People in Microsoft

are meeting about it daily," said the source, who called it a home networking effort.

A suddenly glib Microsoft last week refused to comment and also rejected requests to interview Carl Stork, general manager of Microsoft's hardware manager, despite the fact that he was quoted in a published report last week on the subject.

EFFORT UNDER WAY

"All that's needed is a small amount of software in a PC to identify devices.... We're working on it," Stork told the trade weekly EE Times. He also said Microsoft's vision was to add IP support to devices to link to networks and use software on the PC to recognize them; Jini puts the smarts in the devices.

The Jini infrastructure, built on the platform-independent Java language, was designed to be embedded into various devices and bypass device-to-device connections in the corporate network. The goal is to let users connect devices to the operating system without any configuration or integration. "You may go out and buy one of 30 printers, and you don't want to care what it is. You want to plug it in and have it work," said Colin Mahony, an analyst at The Yankee Group in Boston.

Jini isn't yet on the market, but device manufacturers — such as Sweden's Telefonaktiebolaget LM Ericsson — are working to embed the Jini technology into their products.

"Jini will always offer more promise as long as it's cross-platform and Microsoft isn't," Mahony added. □

Microsoft changes V2K tune

By David Owenstein

NEED MONTHS, Microsoft Corp. will sketch out plans still under development to help users fix year 2000 problems next year. Analysts say the company still can provide meaningful help — even if its approach to the problem once had been denial.

That's because Microsoft's bulky product remains powerful, said Jim Duggan, an analyst at Gartner Group Inc. in Stamford, Conn. "They went through two years of denial, saying this was a mainframe problem only. If they say it's an important problem, they will get a lot of people to take a look."

"We're really firming up our plans right now," said Don

Jones, Microsoft's year 2000 product manager. "We've been very, very focused on getting our products tested. Now, we're getting our arms around what our customers are asking from us" beyond Microsoft products.

As such, the company expects to launch programs and perhaps offer tools starting early next year, Jones said. The two areas in which Microsoft has the most direct responsibility are in its operating systems and applications. It will work with partners and vendors who already have year 2000 products and expertise to produce programs or tools to be added.

Possible programs could include an E-mail list that would push information to

users, or a series of seminars.

The company already maintains a year 2000 Web site about its products and partners (www.microsoft.com/y2k) and launched a toll-free number (1-888-MSFT-Y2K) earlier this month.

GIVING BACK

"Microsoft needs to have some workshops and give something back to all the customers that have invested millions of dollars in Microsoft software," said William Ulrich, president of Tactical Strategies Group Inc. in Soquel, Calif., and a *Computerworld* columnist. "It is never too late to be a good corporate citizen." Ulrich said Microsoft can use its marketing and distribution muscle to help effective year 2000 tools that already are on the market proliferate much faster.

Users expected to benefit the most are the millions of small businesses that remain unaware or apathetic about the problem, analysts said. Larger businesses also could benefit because many of those small businesses are trading partners or suppliers.

For at least some users, however, Microsoft can't offer any more help. For example, The National Underwriter Co. in Cincinnati, an insurance industry publisher, already has this year 2000 work well under way, including its desktops, said John W. Fairbank, the company's IT manager. Because the publisher has time-based data such as subscription to deal with, its year 2000 effort began in early 1997. □

Frank Hays discusses Microsoft and year 2000 in this column. Page 12



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Doctors publish cybertextbook

► Mary Cole the medical publishing world if they overcome obstacles

By Barb Cole-Gomabli

A scanner Web site with learners publishing giants to the punch when it comes to producing and offering a medical textbook online.

For the past few weeks, Emedicine.com, a company formed by a group of physicians, has been making its Emedicine: Emergency Medicine textbook available free on its Web site. Using Web-based collaboration software that it developed, Emedicine was able to crank out the medical text in just over a year. It can update the book constantly.

"Normally, a textbook of this magnitude [takes] three to four years to publish," said Dr. Scott Pflieger, CEO of the St. Petersburg, Fla., company. "By then, the text would be out of date," he said. Also, a traditional medical book would retail for \$50 to \$100, according to industry experts.

Using the Web-based collaboration software, the company has been able to include contributions from 400 authors and include audio and video. Emedicine is able to give the textbook away because the company accepts corporate sponsors and banner advertisements, although it hasn't turned a profit yet.

Analysts said Emedicine's ability to offer such a text on the Web is impressive, considering

that some well-established medical publishers have yet to do so.

Indeed, none of the three big players in this space — W.B. Saunders Co., Mosby Publishing Inc. and Lippincott Williams & Wilkins — has gone this far. Those publishers' online efforts focus mostly on putting medical journal articles and the tables of contents of books on the Web.

That may be because doctors are still more likely to turn to the bookshelf than the Internet for information while at work. A May survey of 170 U.S. hospital executives by Gordon & Gluckson PC, a Chicago-based law firm, showed that less than 10% of physicians and hospital employees have access to the Internet.

Emedicine's approach is also risky because most medical books don't contain advertising, so there is a potential for the perception that the book is biased toward advertisers, according to Mitch Work, senior vice president at Sheldon I. Dornfest & Associates Ltd., a Chicago consultancy that specializes in health care information technology.

Security is another issue, Work said. Because the software used to create the book allows for multiple authors, Emedicine will have to "ensure that no unauthorized source is updating that information," Work said.

Officials at Emedicine.com said their collaboration software requires that authors enter



Using homegrown Web-based collaboration software, Emedicine.com can update its textbook constantly

passwords as a safeguard.

Jeff Narucki, an analyst at Progressive Strategies Inc. in New York, applauded Emedicine's approach because it's targeted at a specific audience. "It's like a portal," Narucki said. "If they have a large group of

people — in this case, doctors — coming together on a Web site, they should be able to draw advertisers."

More companies build Web strategies. See Pages 10 and 39

Asset-management tools go beyond call of duty

By Jyolkumar Vijayan

ASSET-MANAGEMENT practices put in place years ago simply to keep an inventory of mainframe software are starting to pay off — sometimes in unexpected ways.

Last year, the Student Loan Management Association (better known as Salbe Mae) ripped out an software products from a single vendor after discovering that other products it already

had been capable of doing the same jobs. Estimated savings: \$1 million in hardware and license costs.

Meanwhile, a major Midwest pharmaceutical company used software usage profiles — culled from years of asset tracking — to prioritize its year 2000 remediation efforts. By putting infrequently used software on the back burner, the company has been able to focus first on more critical software.

said a company consultant, who requested anonymity.

And Nissan North America Inc. estimated it will save \$17,000 annually by canceling its license for a small statistical utility from SAS Institute Inc. that was being used just once per month by a handful of users. Instead, the company now will use a small homegrown program, according to Michael Lambert, an internal consultant at Nissan's data center in Englewood, Colo.

ing used and bring that to the attention of the people responsible for the software," Lambert said.

The same tool has helped Salbe Mae negotiate smarter deals with software vendors, said David Ochroch, director of information technology asset management at Salbe Mae in Reston, Va.

Five years ago, the organization set up a data repository containing information on contractual obligations, purchase dates, renewal dates and maintenance agreements relating to mainframe software.

The repository normally is used to monitor compliance with vendor contracts, but by combining that information with usage data from Ilogon tools, the asset-management team can "issue red flags on obsolete products or improperly installed products... and can call future maintenance contracts before they are due," Ochroch said.

Verifying usage statistics before negotiating with vendors has contributed to more than \$5 million in contract savings in five years, he said. □

J. D. Edwards to simplify ERP tools

By Craig Stedman

J. D. EDWARDS A CO. next week will announce plans to make its OneWorld applications easier for users to set up and then to change as new business needs arise, according to industry sources.

Software analysts said the an-

nouncement will consist of equal parts technology and marketing by Denver-based J. D. Edwards, which has vowed to be more less stealthy on the sales side as it tries to compete more directly with enterprise resource planning (ERP) rivals such as SAP AG.

"J. D. Edwards is gambling

big that it's really going to be able to take on [SAP and other ERP vendors]," said Dave Monroe, an analyst at Plant-Wide Research Group in North Billerica, Mass.

J. D. Edwards is already among the top five ERP vendors, with revenue of \$6.27 billion in the first three quarters of its latest fiscal year. However, most of the company's sales still involve AS/400 users, and the OneWorld client/server applications are just reaching functional equivalence with J. D. Edwards' older minicomputer software.

A new OneWorld release due next month is expected to have everything that's in the AS/400 software and more. Sources said it also will set the foundation for the more flexible configuration technology that J. D. Edwards plans to detail next week.

Officials at J. D. Edwards declined to comment. □

Corrections

Because of an editing error, a Nov. 9 column by William Ulrich ("The night the lights went out in Google") misidentified an organization that recently issued a report on power supplies and year 2000. It is the North American Electric Reliability Council.

A Nov. 9 news story ("Waste update to introduce browser fee") misquoted the name of a Netscape developer and administrator at American Family Insurance Group in Madison, Wis. He is Steve Eisenbachnick.

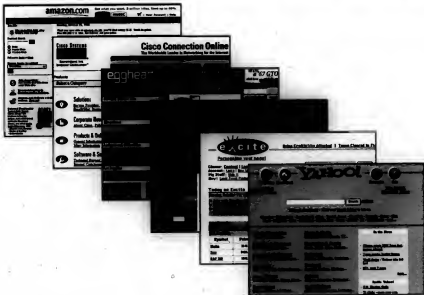
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Rating intangibles no easy task

• Eli Lilly tests value of knowledge reservoir

By Roberta Faurio

ELI LILLY & CO. has not only put knowledge management into practice, but it has also found a way to measure the approach's business value.

Indianapolis-based Lilly has created several Lotus Notes-based applications, some still in pilot phase, designed to let drug development teams worldwide trade information.

The projects have been under way for two years and involve both business and information technology staffs.

The Lotus Notes-based applications offer researchers, chemists, marketers and business managers updated access to product information, best practices, costs and time lines.

"We can talk about lost sales and about how X and Y salespeople didn't know what the other was doing, but we can't put a number to it."

—Cari Spertslage, Rockwell Collins

But even more important, the projects are rated to assess Lilly's knowledge management efforts. Rebecca Fiebel-Perez, manager of IT and planning operations at Lilly, said the projects are scored subjectively from 1 to 5 in each of five character traits—technology, profit, content, people and content. That's

Reasons to invest in knowledge management

- Increased customer service
- Faster response
- Higher levels of innovation
- Reduced costs
- Competition

Base: More than 600 corporate users of knowledge management software

Source: The Delphi Group, Boston



no small feat: The biggest obstacle to more widespread adoption of knowledge management is that people don't understand what it is and how to measure it, analysts say.

INVESTMENTS

According to research firm The Delphi Group in Boston, more than 600 corporate users polled have invested in knowledge management projects.

But in the long run, what will kill [knowledge management] is the lack of being able to tie it to discernible achievement in the company," said Robert D. Aaron, president of Aaron Smith Associates Inc., a consultancy in Atlanta.

Measuring knowledge management is difficult because it requires placing a value on an intangible return on investment—something old-guard business managers aren't comfortable with, Aaron said.

Delphi analyst Haidley

Reynolds said the means by which knowledge management can be cost-justified is specific to each industry. For the phar-

maceutical industry, it could center on bringing patents under control. Such programs "can help them see which patents are active and potential product lines," Reynolds said.

CYCLE IMPROVEMENTS

Lilly wanted to use knowledge management to manufacture drugs better, faster and cheaper, while working in a rapidly changing business environment, said Martin B. Hynes III, director and pharmaceutical project manager at the 122-year-old company. And the company is seeing improved cycle times

and costs as a result.

But although Lilly has found its measuring stick, others find that goal elusive. Rockwell Collins, an avionics maker in Cedar Rapids, Iowa, is having a hard time putting numbers on knowledge management.

Cari Spertslage, a marketing and research analyst at Rockwell, said the company is trying to choose between a Notes-based intelligence system and an add-on to its existing system.

Spertslage said her team is trying to make a business case for the Notes-based system. "We can talk about lost sales and about how X and Y salespeople didn't know what the other was doing," she said, "but we can't put a number to it."

Network tools focus on big picture

• Software audits detail costly inefficiencies

By Cynthia Bournelle

ADJOINING NETWORKING hardware in one way to speed up network traffic, but it can be costly. Another way is to use your existing network resources more efficiently to reduce or eliminate the need for new purchases.

That's the promise of performance-based network management software. Those tools gather, document and store data about the network, including devices, systems, physical connections and circuitry.

That audit shows what's on the network, where it is and how it's being used. Information technology departments can use the knowledge to redevelop or redesign their networks

more effectively, vendors said. The companies also offer design tools for use once the audit is complete. Pricing for the tools starts at \$15,000, depending on the options selected.

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"These tools help you focus on what you have in the network, how it's performing and how you can make it perform better," said John Inverso, an analyst at Datapro

in Delran, N.J.

Visionnet isn't the only vendor of such products. Concord, Mass.-based NetSuite Development Corp.'s NetSuite products also discover components and store the information.

The primary difference between the two is that Visionnet's Net software lets multiple users collaborate on network designs. NetSuite's design tool targets single users. A secondary difference is that Net gives users access to data stored in one database and NetSuite doesn't.

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The network audit software shows what's on the network where it is and how it's being used

OpenView gets Oracle8i interoperability

By Cynthia Bournelle

ENTERPRISES that rely on Oracle Corp. databases should find network administration and problem solving easier as Hewlett-Packard Co., for the first time, will provide interoperability between its OpenView Network Node management system and the Oracle8i Enterprise Manager suite, HP officials said last week.

The integration will let network systems and database administrators share management information between both companies' platforms without requiring custom integration by

customers, HP officials said.

As part of the integration, maps of enterprise resources can be shared between the products so users can identify and track their Oracle software. Problem alerts will be shared between the environments to reduce the time it takes to identify and resolve service issues.

OpenView for Oracle will be available by April. Pricing wasn't disclosed.

The move is an extension of HP's Application Quality of Service strategy designed to expand HP's presence beyond network and systems components to databases.

Yet, although the news falls behind that of its competitors—for example, IBM subsidiary Tivoli Systems Inc. introduced its management product for Oracle two years ago—it isn't too late, according to Stephen Elliot, an analyst at Cahners Inc.-Stat Group in Newton, Mass.

"Users have spent money on these applications and are now just seeing the impact they have on revenues," he said.

In addition, HP said it will release by July a set of management tools to OpenView customers running SAP AG's enterprise resource planning applications. □

Rating intangibles no easy task

► Eli Lilly tests value of knowledge reservoir

By Roberta Foster

ELI LILLY & CO. has not only put knowledge management into practice, but it has also found a way to measure the approach's business value.

Indianapolis-based Lilly has created several Lotus Notes-based applications, some still in pilot phase, designed to let drug development teams worldwide trade information.

The projects have been under way for two years and involve both business and information technology staffs.

The Lotus Notes-based applications offer researchers, chemists, marketers and business managers updated access to product information, best practices, costs and time lines.

"We can talk about lost sales and about how X and Y salespeople didn't know what the other was doing, but we can't put a number to it."

— Carl Spierfage, Rockwell Collins

But even more important, the projects are rated to assess Lilly's knowledge management efforts. Rebecca Field-Perez, manager of IT and planning operations at Lilly, said the projects are scored subjectively from a 1 to 10 in each of five characteristics — technology, profit, content, people and context. That's

- Reasons to invest in knowledge management**
- Increased customer service
 - Faster response
 - Higher levels of innovation
 - Reduced costs
 - Competition

Base: More than 600 corporate users of knowledge management software
Source: The Expert Group, Boston



no small feat. The biggest obstacle to more widespread adoption of knowledge management is that people don't understand what it is and how to measure it, analysts said.

INVESTMENTS

According to research firm The Delphi Group in Boston, more than 600 corporate users polled have invested in knowledge management projects.

"But in the long run, what will kill [knowledge management] is the lack of being able to tie it to discernible achievements in the company," said Robert D. Aaron, president of

Aaron Smith Associates Inc., a consultancy in Atlanta.

Measuring knowledge management is difficult because it requires placing a value on an intangible return on investment — something old-guard business managers aren't comfortable with, Aaron said.

Delphi analyst Hadley

Reynolds said the means by which knowledge management can be cost-justified is specific to each industry. For the phar-

macuticals industry, it could center on bringing patents under control. Such programs "can help them see which patents are active and potential product lines," Reynolds said.

CYCLE IMPROVEMENTS

Lilly wanted to use knowledge management to manufacture drugs better, faster and cheaper, while working in a rapidly changing business environment, said Martin B. Hynes III, director and pharmaceutical project manager at the 122-year-old company. And the company is seeing improved cycle times

and costs as a result.

But although Lilly has found its measuring stick, others find that goal elusive. Rockwell Collins, an avionics maker in Cedar Rapids, Iowa, is having a hard time putting numbers on knowledge management.

Carl Spierfage, a marketing and research analyst at Rockwell, said the company is trying to choose between a Notes-based customer and competitive intelligence system and an add-on to its existing system.

Spierfage said her team is trying to make a business case for the Notes-based system. "We can talk about lost sales and about how X and Y salespeople didn't know what the other was doing," she said, "but we can't put a number to it." □

Network tools focus on big picture

► Software audits detail costly inefficiencies

By Cynthia Bourne

ADDING NETWORKING hardware is one way to speed up network traffic, but it can be costly. Another way is to use your existing network resources more efficiently to reduce or eliminate the need for new purchases.

That's the promise of performance-based network management software. Those tools gather, document and store data about the network, including devices, systems, physical connections and circuitry.

That audit shows what's on the network, where it is and how it's being used. Information technology departments can use the knowledge to redevelop or redesign their networks

more effectively, vendors said. The companies also offer design tools for use once the audit is complete. Pricing for the tools starts at \$15,000, depending on the options selected.

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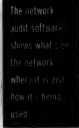
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Clothes maker pressed to sell on Web

► At LogoAthletic, conflict with retailers takes back seat to ramping up direct Internet sales

By Sharon Machlis

A MAJOR MARKET of licensed sports apparel has moved onto the Web, selling directly to consumers even as it continues to supply other retailers with caps, jerseys, T-shirts and similar goods.

But LogoAthletic, a private company doing about \$200 million per year in total sales, is "definitely taking baby steps" in Web commerce, according to Eddie White, vice president of advertising and marketing for the Indianapolis-based firm. Saying, "it's not a full-blown attack," White noted that only about 10% of the company's product line is online, and LogoAthletic has yet to start to advertise it.

Retail partners weren't enthusiastic about LogoAthletic's move, White said. But he said they recognized that many man-

ufacturers feel pressure to go online. Many companies find it increasingly important to give consumers what they want on the Internet, where "the competition is a click away," said Heather Ashton, an analyst at Hurwitz Group Inc. in Framingham, Mass.

LogoAthletic makes licensed apparel for the National Football League, Major League Baseball and National Basketball Association, among others. Its spokesmen include quarterbacks John Elway, Troy Aikman and Dan Marino.

The LogoAthletic site is one of the first Internet stores to be built on IBM's AS/400 mid-range system running Net.Commerce software and Lotus Development

Corp.'s Domino.

"We have a lot of experience with the AS/400," said Randy Basket, director of information services and technology at LogoAthletic. "It may not be the [software] of choice today, [but

we think] the platform is going to get better and better."

In addition, the company plans to tie a lot of other business processes to the Net during the next year or two — applications that already run on AS/400 systems. IBM has begun to push the AS/400 as an electronic-business platform, but only a handful of electronic-commerce software applications now run on it, according to Erica Ruggalies, an analyst at Giga Information Group in Cambridge, Mass.

In fact, it's been only a few months since IBM's own Net.Commerce transaction software began to run on the AS/400, said Scott Abbott, president and



LogoAthletic now sells only 10% of its products online but plans to tie more business processes to the Net

CEO of The Alliance Group Corp. in Indianapolis. The firm created the site for LogoAthletic and was pleased with the development environment.

One benefit of the AS/400 as a Web commerce platform, proponents say, is scalability and the capacity to handle large numbers of users.

But bigger isn't necessarily better, some users have found. For instance, the all-IBM shop Buy.com in Aliso Viejo, Calif., is extremely pleased with the suite of dual-Pentium Windows NT servers that are running in some of its online stores, while response times for other sites powered by an IBM S/390 mainframe are "sluggish," said Buy.com President and CEO Scott Blum.

"It's a lot of trial and error. It's very painful to get [it] to work properly," said Blum, who said the problem is properly tweaking custom applications for the mainframe environment. □

Caution! Seasonings avoids channel conflict in its online store. Page 39

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FRANKLY SPEAKING

Slow start for 2000 fix

FRANK HAYES

OK, I ADMIT IT. I snickered when I heard Microsoft is finally going to announce a line of tools and services for fixing year 2000 problems — in December.

December. I thought, December 1998. Barely a year before the cork pop, the bulls drop and the computers start. Is anybody really waiting for a product with "Microsoft" on the box to start cleaning up their millennium mess?

Any company that isn't already well into a full-blown Y2K project is — to put it bluntly — roadkill. dead meat, somebody else's lunch.

Then I pulled up the statistics: Garner's latest guess is that roughly a quarter of all businesses haven't even started their year 2000 fixes. And conventional wisdom says if you haven't started by now — well, you're done for. You're out

of time. You've waited too long, Microsoft or no Microsoft, it's just plain too late.

Is it? Well, it's late, all right. Probably no late that you won't be able to dodge much of the pain when the clock strikes at midnight 13 months from now. And it's almost surely too late to start a conventional year 2000 project.

But it's not too late to survive.



You may have to turn the universe upside down — but you're not roadkill yet.

It's not too late to throw your whole company, not just your IT shop but every single user, at the task of inventorying every computer, every program and every database in the organization. Users know where the boxes are buried. They won't

turn them all up on the first pass — but they'll do a lot better than IT on its own.

It's not too late for the ugliest kind of triage, letting important systems fail so the absolutely critical few can be fixed. That means letting all your users know exactly what systems you won't be able to save — and handing back to user departments the job of fixing and upgrading the hardware and software your IT shop can't.

It's not too late to replace everything you possibly can — whether you're ripping out accounting systems and showing SAP and Oracle applications in their place or putting thousands of fifty PCs and dropping in new hardware. Yeah, it's expensive, and users may have to completely change how they work with the new systems. But at least they'll still be working.

It's not too late to start testing everything you can't replace, testing every fix you make, testing every promise you get from vendors, new or old. And it's not too late to put users to work testing everything they touch inside your business.

Will you get it all done in time? No. And you'll have to tell users what

got fixed and what didn't, so they can work around the land mines and help spot the fires that didn't take.

Will all your users cooperate? Nope. Some would rather watch the company burn than do an hour of your job for a day. That means you'll better sing the praises of the ones who do help out till your voice is raw.

Will things ever be the same once this is all over?

Not a chance. The users who help save your systems will never look at you the same way again. After this, they'll hold you accountable for every feature you promise, every upgrade you install, every system you deliver. And they'll never let go of the investment they made in their systems.

But at least it's not too late. You may have to turn the universe upside down — but you're not roadkill yet.

So I've stopped snickering about Microsoft's being no late. If you haven't started your Y2K fix yet, you need all the help you can get. But it's not Microsoft or any other vendor who will save you. The only ones who can keep you from being too late are your users. D (See related story, page 4)

Hayes is Computerworld's staff columnist. His Internet address is frank.hayes@comp.com.

SHORTS

Netscape earnings up

Netscape Communications Corp. last week reported \$16 million in revenue for the quarterly period ended Oct. 31 — an 8% increase over \$15.2 million for the previous quarter. Net income totaled \$2.7 million, and operating income was \$500,000. Year-to-year comparisons aren't possible because Netscape changed its reporting periods this year.

Novell is back in black

Novell Inc.'s net income this year returned to black ink. The network operating system vendor posted a \$100 million profit, compared with a \$16 million loss last year. Revenue for the year rose slightly to \$1.6 billion. Novell reported a \$25 million quarterly profit on revenue of \$400 million.

AT&T brings local frame relay

AT&T Corp. announced last week it will offer local frame-relay services within 40 metropolitan areas nationwide by year's end, adding to its national and international long-distance frame services. The first cities on the list for the local service are Chicago, Indianapolis, Detroit and Milwaukee, the carrier said.

Acer joins thin-client fray

Aiming separately at corporate users, Acer Inc. in Taiwan said it's not to release in February low-cost, thin-client terminals based on Microsoft Corp.'s Windows CE operating system. The systems are expected to cost much less than \$1,000 — possibly even less than \$500, Acer officials said. They will incorporate flash-memory chips instead of hard drives for local storage.

Japan drops Microsoft case

Japan's Fair Trade Commission said it declined to pursue an antitrust case against Microsoft Corp. However, the commission, which in January raised Microsoft's offices in Japan to look for evidence, warned Microsoft that some of its contracts with Internet service providers were anticompetitive. Microsoft said it no longer uses those contracts and that Japan's decision not to press the case shows that Microsoft behaves legally.



Customer: Mobil Corp., Fairfax, Va.
Prime contractor: Dell Computer Corp., Round Rock, Texas

Terms: \$75 million, three years

Highlights: The oil company will standardize using Dell desktop PCs, notebooks and servers worldwide. Mobil CIO Jerry Kohnenberger expects the desktop standard to reduce the cost of PC ownership by 25% over the course of the three-year contract, as well as to solve the company's year 2000 problem for PCs.

Russia, EU sign E-agreement

The European Union and the Russian Federation last week agreed to cooperate in the fields of electronic commerce and telecommunications. Both signed an agreement committing them to increased public sector cooperation and encouraging collaboration in the private sector. The agreement aims to help build a pan-European market for information services by developing the infrastructure and regulatory framework needed for Russia to become a modern market economy.

Rogue Wave changes focus

Rogue Wave Software Inc. in Boulder, Colo., a maker of components used in object-oriented programming, is changing its focus to producing tools that allow users to integrate application-building components. Rogue Wave is expected to announce Visual Case 2.0 modeling tool and RW-Studio, a tool that maps object models to relational databases.

PeopleSoft sets up R&D spin-off

PeopleSoft Inc. last week said it is setting up a separate company to develop back-office, Internet and data analysis applications. The spin-off, called Momentum Business Applications Inc., will hire Pleasanton, Calif.-based PeopleSoft and other companies to do the work.

SHORT TAKES British Telecommunications PLC will buy a 9.9% share in Eutels Inc.'s U.K. subsidiary for \$10 million, the companies announced last week. ... Computer Associates International Inc. acquired LIDA Systems Inc., a \$25 million consulting firm that specializes in Lotus Notes, data warehousing, Microsoft technologies and electronic commerce. Terms weren't disclosed. ... 3Com Corp. has announced switch-independent head-balancing and VLAN support capabilities on its line of Fast Ethernet Server network interface cards. The software debuts in December. ... Filing year 2000 bids will add about 0.1%, or \$8 billion, to the gross domestic product next year, according to a survey by the Federal Reserve Bank of Philadelphia. ... Natrac Inc. in Lexington, Mass., has acquired Seattle-based Amazon.com's employment services business for about \$75 million. Natrac, a maker of Internet recruiting software, will get exclusive rights to the Jumpstart Corp. online recruitment technology and Web site.

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An IBM Company

Sun NT tool criticized

► Vendor defends Project Cascade for Win 2000

By Jaiharan Vijayan

UNIX SHOPS planning to implement Sun Microsystems Inc.'s forthcoming Project Cascade technology, designed to tie together Unix and Windows NT environments, may find themselves coming

services — from their Solaris environments. It's based on AT&T Corp.'s Advanced Server for Unix (AS/U) technology.

But Project Cascade offers less interoperability than what Sun offers through Syntax, said Roger Franklin, CEO of Syntax in Federal Way, Wash.

Sun officials last week acknowledged that Project Cascade won't have the same multipatform capabilities offered by Syntax's TotalNet Advanced Server (TAS) technology. TAS allows Windows NT, NetWare and Macintosh clients to access common Solaris files. Project Cascade's technology will create a separate NT file system on Solaris, offering less interoperability for users.

The Syntax software may prove a better option in large multipatform environments.

said Jerry Knowles, a systems project leader at Jacksonville Electric Authority in Florida.

Last year, the utility used AT&T's AS/U to connect a Unix server to more than 800 Windows clients. Shortly thereafter, the company decided to replace it with TAS because of scalability problems involving AS/U. Knowles said. "We had to rebuild everything from scratch" each time users were added or changes were made, he said.

QUESTIONS ON CODE

A lawsuit involving Windows NT source code that AT&T and Microsoft Corp. settled in September also presents some questions for Project Cascade. Though AT&T officials said they will support AS/U on Windows NT 4.0, it isn't clear whether the company will get access to code so that AS/U will be compatible with Windows 2000 (the new name for NT 5.0).

Sun officials acknowledged that there are questions to answer in the wake of the AT&T/Microsoft settlement. But they said built-in Unix interoperability features in Windows 2000 should answer those concerns. In addition, Project Cascade will support a Microsoft end-user authentication technology called Primary Domain Controller, which provides a better option than Syntax for easing all-NT shops into Unix.

Cascade allows NT-style management for users who want Solaris' scalability and reliability to merge Windows NT Servers.

Sun officials said the company will continue to offer TAS as an option in mixed environments. □

IBM offers performance protection for Baan apps

By Jaiharan Vijayan

USERS LOOKING to implement Baan Co.'s enterprise resource planning (ERP) software may want to consider a new IBM service that offers performance guarantees for up to two years on the company's RS/6000 Unix servers.

IBM last week announced a Performance Protection Plan for first-time Baan implementers guaranteeing that its hardware will meet certain predefined performance levels when running Baan ERP applications.

If the hardware fails to meet those levels, IBM will bear the full cost of providing whatever upgrade it takes — such as more memory, CPUs or storage — to get performance up to the agreed-upon levels, an IBM official said.

QUESTIONNAIRE

Customers fill out a seven-page IBM questionnaire covering details such as planned transaction volume and projected application loads on the Baan environment. Based on the user input, IBM will come up with platform recommendations that it will guarantee.

Such guarantees are rare but not unheard of in the industry, said Jonathan Emice, an analyst at Illuminata Inc. in Nashua, N.H. Companies such as Data General Corp. and Hewlett-Packard Co. have similar offerings, for example.

Hardware guarantees provide a measure of security for users and eliminate the complex capacity-planning exercises that ERP projects usually require. Emice said. □

Web project courts print advertisers

By Sharon Macklin

A NATIONAL NEWSPAPER consortium plans a \$5 million Internet project designed to make it easier for advertisers to buy space in multiple papers by placing orders over the Web.

Now, large corporations and their ad agencies typically deal with each local paper individually, placing orders or separate orders across the country and receiving separate bills for each.

Ad buyers say the system is much more time-consuming than, say, placing ads in a national magazine, where they

might place an order and send in ad materials just once.

"I think the [association] has the right idea," said Dick Mahalo, media director at Austin Kelley Advertising Inc., an Atlanta ad agency that was asked to supply project input. Still, "I've got to see it," he added.

The Newspaper Association of America (NAA), a nonprofit trade group with more than 1,700 member newspapers that represent 87% of total U.S. newspaper circulation, last week selected KPMG Peat Marwick LLP in New York to begin developing the project. The associa-

LINUX SUPPORT		
The four largest database vendors all will have released flagship database products for Linux by next month		
Vendor	Product	Release date
IBM	DB2 iSeries	December
Oracle	Oracle8i	October
Sybase	Adaptive Server	September
Informix	Informix-SE	July

Linux gains support from database vendors

David Cronstein

LINUX'S ENTERPRISE credibility climbed further during the past two weeks as IBM released its DB2 database for Linux and its Transarc subsidiary announced that the upcoming version of its AFS file server will include a Linux port.

With IBM's Dec. 7 beta release of DB2, all of the four largest database makers now have products for Linux.

Users and vendors have been crying out another's interest in Linux to see whether they should invest in the technology. IBM's new products for Linux, coupled with those of other vendors, will help encourage more corporate customers to look at the operating system, said Michael Gouldie, an analyst at Patricia Seybold Group in Boston.

But vendors may be pushing Linux only because they are struggling for a way to compete with Microsoft Corp., he said. "The most skeptical among us would say they are grasping at straws," Gouldie said.

Pittsburgh-based Transarc's

release of AFS could help drive the adoption of Linux among researchers in high-energy physics at Stanford University's Linear Accelerator in Palo Alto, Calif. Assistant director of computing services Chuck Boehm said researchers use the Solaris version of AFS file server to serve about 600G bytes of data to collaborators in about 40 countries.

SMALLER IS BETTER

Access to the data might be quicker and more reliable if the network were redesigned with several smaller, cheaper Linux servers rather than a few large Solaris servers, Boehm said.

Transarc will sell the server licenses for new AFS flavors for Linux — and for Windows NT — for \$1,995 each when Version 3.5 is released in February. The server license for various Unixes will sell for \$4,995 each.

Other users remain unconvinced that Linux is worth their attention, at least yet. A data center manager at a major U.S. insurance company who asked not to be identified said the industry's emerging support for Linux isn't yet sufficient to alter his company's choice of running DB2 on Hewlett-Packard Co.'s HP-UX Unix.

Gouldie agreed that Linux won't run mission-critical applications, at least in corporate environments, in the immediate future. □

For daring users, Linux changes operating system mix. Page 82

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AOL deal worries business users

CONTINUED FROM PAGE 1

gies at Boise Cascade Office Products Corp. in Itasca, Ill.

AOL acknowledged that it bought Netscape for its browser, portal and electronic-commerce services "as they relate to meeting consumer needs," said Heather Ashton, an analyst at Hurwitz Group Inc. in Framingham, Mass. "It remains to be seen what kind of focus business customers will receive."

AOL's consumer focus, however, is balanced to some degree by a related deal with Sun Microsystems Inc., which will help develop and resell Netscape products, analysts said. Sun has pledged to pay \$350 million to license AOL/Netscape software,

tion server.

Sun Vice President John Loiscom and no decision has been made about which application server will serve as the backbone for the electronic-commerce system it will develop.

Another issue is the future of one of Netscape's strongest competitive advantages: its cross-platform support. "Its ability to be neutral across all the various operating systems is what has made it such an attractive proposition to many large corporations," said David Yoffie, a Harvard Business School professor who wrote the book *Competing on Internet Time: Lessons From Netscape and its Battle With Microsoft*.

But other Netscape corporate users said they had positive feelings about the acquisition, saying they hope to see the financially troubled software vendor gain stability as a result of the merger.

"Hopefully, what we'll get out of this acquisition is some real strong vision and direction, because Netscape has been waffling for a while," said Steven Durlinger, a software project manager for San Diego-based Southern California Gas Co.'s EnergyMarketplace Web site.

"Everybody knows that the computer industry is here to go, gone tomorrow. Sometimes they merge, some-

times they don't. But for business users, a company's going to be around a while," said Sherman Yoo, a senior director of information technologies at US West Inc. in Denver.

Indeed, Netscape, which reported losses earlier this year in the face of relentless pressure from Microsoft Corp., not only expects to stabilize but gain some product development help from Sun—particularly with its browser. Netscape earlier this year chose to release the source code of its Navigator browser free of charge to gain a development boost.

Who said he isn't worried. He said he can't see why AOL or

Sun would abandon corporate customers such as US West, which has standardized on Netscape's messaging products. And if AOL is testing Sun/Netscape products on its consumer base, that will serve the enterprise customers well because it will show "they've got [the products] working for themselves," he said.

THE PORTAL BECOMES

From AOL's viewpoint, the lure was Netscape's Netcenter Web portal, given that AOL has no experience with enterprise software business, analysts said. Without Sun in the picture, the deal was a risky proposition, they said. "AOL will focus primarily on the Netcenter portal and its daytime business audience. Make no mistake. That's what they bought Netscape for," asserted Peggy Ledwith, an analyst at Dain Rauscher Westels, an investment banking firm in Minneapolis.

Sun, not known as a major Internet software player, gets access to electronic-commerce products as well as avenues to promote its Solaris platform and Java programming language. AOL said it plans to use Sun's Java technology to offer services on Internet devices.

Officials said they expect the deal to close in the first quarter of next year.

But before anything can happen, the deal among AOL, Netscape and Sun—all of which have aided the government's antitrust suit against Mi-

LET'S MAKE A DEAL	
What the major players get from the AOL/Netscape deal	
AOL	Sun Microsystems
• Direct access to browser technology • Partnership with major platform vendor (Sun) • Netcenter users (5M registered, 5M visits per day) • A business/daytime audience via Netscape's Netcenter • Electronic-commerce software • Sun, Netscape sales channels	• Major Internet-player status • Netscape commerce, server and browser technology • AOL sales channels • New avenue to promote Solaris and Java
AOL customers	Microsoft
• One-stop, end-to-end electronic services	• New challenges to The Microsoft Network • A bigger foe in systems provider arena • Big battle for corporate and consumer Web users, the browser market, electronic-commerce and operating systems
Netscape	Other Web portals
• An "exit strategy" that preserves stockholder value • A deep-pocket parent to fund future endeavors • Development help from Sun	• Two, instead of one, 800-pound gorillas to fight for advertising revenue

Source: Zone Research Inc., Redwood City, Calif.; Computerworld research and industry analysts

crosoft—will draw government scrutiny. And archival Mosaic already sensed the opportunity to claim that the merger shows how quickly the competitive landscape can change.

But Ralph Nader's Consumer Project on Technology, for one, plans to ask federal regulators to block the deal on grounds that it will harm Internet service provider competition. The Washington group charged that, if the merger takes place, independent providers will be forced

to acquire browser software from their two most significant competitors: AOL/Netscape and Microsoft, who have put proprietary locks into their offerings.

Chairman Steve Case said AOL plans to continue to bundle AOL software with Windows. AOL's agreement to use Microsoft's browser expires at the end of January. "Our present intention is to continue with that deal so we can continue to be bundled with the Windows desktop," Case said. □

Business Deal: AOL, Sun, Netscape

AOL's deal for Netscape—which puts Sun Microsystems into the role for financing and developing Netscape software—ensures the company will have to continue supporting third parties, such as e-commerce application vendors, analysts said.

Sun and Netscape—both will Internet access to large companies and Internet service providers—Sun's Internet Mail Server and Netscape's Netcenter Server.

Sun and Netscape will continue to ensure that the deal doesn't hurt the company's other business, such as e-commerce application vendors, analysts said. "That's probably a good thing for Sun and Netscape," he said.

Netscape and Sun have other competing products, including a Web browser and application server, and the companies will need to make proprietary product development decisions, said Sun Vice President John Loiscom.

"We're here to ensure people that we will exist at a point that is acceptable and that we will give them adequate notice of what plans we will take into account their concerns," he said. —Roberto Rosero and Carol Ellis

and AOL will spend \$500 million to buy Sun's hardware and software. But Sun and AOL were short on specifics last week, beyond saying that they'll develop a suite of products to help companies enter the electronic-commerce market.

The Sun deal could impact Boise Cascade. It uses one of Netscape's electronic-commerce products and has been testing Netscape Application Server as a potential replacement for the homegrown code at the backbone of its system. "Would [Sun] even continue with the product?" Pavone asked, noting that Sun also sells an applica-

tion server. Because it means a company's going to be around a while," said Sherman Yoo, a senior director of information technologies at US West Inc. in Denver.

Indeed, Netscape, which reported losses earlier this year in the face of relentless pressure from Microsoft Corp., not only expects to stabilize but gain some product development help from Sun—particularly with its browser. Netscape earlier this year chose to release the source code of its Navigator browser free of charge to gain a development boost.

Who said he isn't worried. He said he can't see why AOL or

Ericsson to target U.S. businesses

By Matt Hamlen

ERICSSON INC., a major European vendor known for its wireless phones, last week said it's beefing up its sales and service staff for corporate networking customers in the U.S.

In market share, analysts said the Stockholm-based company ranks second behind SpectraLink Corp. for installed wireless private branch exchange (PBX) systems in the U.S.

One Ericsson customer, Menninger Care Systems in Dallas, has repeatedly chosen Ericsson systems because of their low price and Ericsson's commitment to providing open standards for data and voice network devices, said Mark Slater,

director of information systems at the health care provider.

"People do wonder [why I chose Ericsson], but they gave us a price we couldn't refuse" of less than \$500,000 for a new PBX and 300 telephones, Slater said in an interview.

As for open standards, Menninger is beta-testing OneBox, a unified messaging system from Ericsson that was designed to work with all brands of PBXs. That's an important feature should Menninger decide to have OneBox interoperate with PBXs in other branch offices in the U.S., Slater said.

Menninger's help desk staff also uses Ericsson's cordless phones.

Ericsson needs to bolster its

service staff in the Dallas area and quicker parts deliveries from Sweden, Slater said. The company's pledge of a stronger U.S. commitment might help, he added.

OneBox will be available early next year, but pricing wasn't announced. Jane Zwigg, analyst at Henschel Shocks Associates in Wheaton, Md., said pricing "doesn't matter" because Ericsson appears willing to subsidize sales to get U.S. customers.

Hilary Mine, an analyst at Probe Research Inc. in Cedar Knolls, N.J., said Ericsson has "some very interesting products, particularly in the wireless area, but their challenge is developing effective distribution in the States." □

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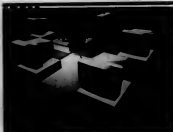
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Software improves Net purchasing process

► Upgrades focus on automation, customized pricing

By Carol Sliva

NETSCAPE COMMUNICATIONS CORP., Commerce One, Inc. and Oracle Corp. are rolling out versions of their software for

helping companies buy goods and services from suppliers over the Internet.

Netscape's BuyerXpert 2.0 can automate processes — such as purchase orders, invoices and advance ship notices

— with suppliers through prebuilt Web forms that the suppliers can access over the Internet. That should let suppliers reduce costs and help customers negotiate better rates, a spokesman for Netscape said.

"Unlike some other companies in this

Shell Canada discovered a great resource for putting a cap on IT costs.

Managing resources is what Shell Canada is all about. So when IT costs reached unacceptable levels — over \$100 million annually — Shell decided it was time to do something about it.

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Shell found a solution: they replaced these systems with enterprise software by J.D. Edwards, integrated seamlessly throughout their core business functions.

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\$17 million down to \$9 million. Reducing costs has allowed us to direct IT dollars to areas that benefit the customer as well as enhance shareholder confidence."

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segment, Netscape's primary focus is on connections between buying organizations and suppliers," said Erica Rugulies, an analyst at Giga Information Group in Cambridge, Mass.

This focus on connecting trading partners — coupled with Netscape's integration with back-end enterprise resource planning (ERP) systems — could help companies use the product to procure both direct and indirect materials, Rugulies said. Right now, these kinds of products (from non-ERP vendors) are used primarily for procuring indirect materials.

ONLINE LINK

The new BuyerXpert also lets companies link their sites to online services such as Netscape's Netcenter Web portal, maps data into complex accounting structures and improves user interfaces with wizards that can walk the user through the buying process.

"Unlike some other companies in this segment, Netscape's primary focus is on connections between buying organizations and suppliers."

— Erica Rugulies

Giga Information Group

BuyerXpert 2.0, which runs on Sun Microsystems Inc.'s Solaris platform, shipped Nov. 23 at a cost of \$490,000 for the first two CPUs.

Walnut Creek, Calif.-based Commerce One last week released new versions of its BuySite product, for automating the procurement process from requisition to order, and its MarketSite product, for automating supplier interactions from order to payment.

BuySite 4.0 features an improved user interface and search capabilities, lets administrators limit the number of categories a user can access and adds support for two new client platforms, Windows 3.1 and 95.

MarketSite 2.0 adds a new pricing server that can reflect negotiated contract terms with suppliers and a tool that allows suppliers to access their orders and maintain and update catalogs with out having to install software at their own sites.

Oracle's third-generation Strategic Procurement — a set of applications that lets companies order products online and analyze and manage supplier relationships — gives users two new capabilities: ordering products through TPN Register LLC and accessing catalogs hosted by Requisite Technology Inc.

Ordering from TPN Register through Oracle lets companies enforce business rules, have a consistent user interface and gain access to customized pricing.

The Requisite-hosted catalogs also can be customized to fit a particular company's needs. □



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Where do you want to go today?

Microsoft license changes boost costs

CONTINUED FROM PAGE 1

soft's decision, starting late last year, to replace concurrent-user pricing with per-user pricing. Under the concurrent scheme, companies could buy copies of software for many users to share; now everyone must have his own copy.

For users renegotiating existing contracts, the demise of concurrent pricing is starting to kick in—and hurt.

At GenAmerica Corp., the cost to license Microsoft Office will double or perhaps triple next year, said Walter Schultz, vice president of group information systems at the insurance company in St. Louis.

Until now, GenAmerica licensed several hundred copies of Office for its 1,500 users to share. About 500 used the applications infrequently, but for important tasks, so concurrent user licenses made sense, Schultz said. He said he has

told Microsoft how unhappy he is about the new policy, but it hasn't help.

"They countered with some pretty weak arguments, like, 'if you've got some people who are just readers, then they could use a viewer,'" he said. Schultz's advice for fellow users: Have a second, non-Microsoft suite in your organization; the competitive threat can keep licensing costs in line.

"We happen to be a Microsoft shop," Schultz said. "They basically have me, on 1,500 copies." But if he had, say, 800 Microsoft Office users and 700 IBM/Lotus suite users, he could get better terms from Microsoft, he added. "We're at least considering alternative vendors [to bring in another suite]."

In the Computerworld survey, 52 IT buyers (or 34%) said they had been affected by Microsoft's elimination of concurrent pricing,

with almost all of them saying they are facing higher software costs.

Microsoft won't return to concurrent-user pricing, mainly because only "a small percentage" of Microsoft's tens of thousands of customers wanted it, said Peter Boit, the vendor's general manager of worldwide volume licensing.

Microsoft has "always been open, if a customer feels there has been some effect to them, to engage in a dialogue about that," Boit said. But he added, "We have not changed that policy... and we're not going to reintroduce it."

To be sure, some large Microsoft users, including Office Depot Inc. in Delray Beach, Fla., said they have seen no increases in software costs.

But as Microsoft makes a serious push to become an enterprise-level supplier, prudent IT managers should watch for other expensive surprises buried in Microsoft's contracts (see time line below).

Owens Corning in Toledo, Ohio, for example, was surprised last year when it was required to pay up front, on Jan. 1, for the whole year's worth of software—a payment of several million dollars, CIO David Johns said. Previously, the company paid quarterly, after the software was installed.

Microsoft has "become increasingly aggressive and presumptuous and has structured agreements [so that] either you take Microsoft's full product line or buy a la carte. But if you buy a la carte, you're going to hurt," said Daniel Gasparro, chief technologist at Booz Allen & Hamilton Inc. in McLean, Va. Gasparro just finished a six-month negotiation with Microsoft—"like root canal," he said—for Windows 98 and Windows NT and future upgrades, as well as Microsoft Office and other applications.

In several studies of Microsoft contracts during the past nine months, analyst firm Gartner Group Inc. found that costs to some users will double or triple on some products, including BackOffice.

Microsoft operates differently from other enterprise vendors, says Mary Welch, an analyst at Gartner in Stamford, Conn.

For example, while other software vendors change contract terms occasionally, Microsoft does so an average of two to



WALTER SCHULTZ

Walter Schultz says GenAmerica's costs for licensing Microsoft Office will double or triple.

four times per year, Welch said.

Another example: This used to be no limit on the number of users who could connect to a single copy of Windows NT Workstation, prompting many midsize IT shops to use the product as an Internet server operating system. But Microsoft now limits the number of users to 10, forcing many companies to upgrade to the pricier NT Server. That's a price difference of at least \$200 per server, Welch said.

Microsoft comes in with a very low [package] price in gain market share. Then as share increases, they figure out ways to increase revenue without changing list prices," she added. Several users agreed.

In the Computerworld survey, 23% of the IT managers said Microsoft had changed the terms of their software licenses, usually for Office 95/97, Windows NT Server, Windows 95/98, BackOffice or Windows NT Workstation.

MORE FOR 2000

Microsoft's new tiered structure for Windows NT Server—when it ships under the Windows 2000 moniker next year—may also cost users more money than they would have otherwise paid, according to Welch.

Windows 2000 will come in three versions, priced progressively higher: a basic server, an

applications server and a high-end server aimed at data centers. Microsoft, which hasn't released actual Windows 2000 pricing yet, claims that users will get different features in the different versions. The data center edition will come with more systems management tools than the basic version, for example.

Microsoft did something similar with the BackOffice suite of products last year, Welch said. The so-called enterprise version of BackOffice costs two to five times the "standard" edition, she said. And existing users of the standard edition couldn't use their maintenance agreements to upgrade to the enterprise suite.

"There are changes that most of their customers didn't expect to see," she said.

Boit doesn't dispute that Microsoft has changed several key parts of its contracts. But that doesn't necessarily mean users pay more, he insisted.

"We disagree" with such conclusions, and Gartner's analysis in particular, Boit said. "They take some of the changes and apply them in too broad a fashion and put too many of them on [a hypothetical] customer situation," Boit said. "I have yet to see any customer that looks like what Gartner says."

Boit pointed to Microsoft's one-year-old Enterprise Agreement as a "flexible" contract option created to meet the call of users for simpler license terms.

Under the Enterprise Agreement, users can contract for software for up to four years in advance and make lump-sum payments once per year. That's simpler than Select, which doesn't cover all the products Enterprise does and which calls for quarterly payments, Boit said.

CHANGES IN MICROSOFT LICENSE LANGUAGE

June 1998

Number of users of a single copy of Windows NT Workstation capped at 10; previously, there was no limit.

October 1998

Licensed users no longer allowed to keep a copy of Office 97 on home PCs without buying another license.

Maintenance agreements no longer prohibit users must pay full two-year maintenance contracts no matter when in the

life cycle the agreements are bought.

July 1997

Each Internet user of a SQL Server database must have a Client Access License; previous policy was unlimited use.

November 1997

Concurrent-user rights eliminated for Exchange.

December 1997

Concurrent-user rights eliminated for Office 97.

How to negotiate with Microsoft

Negotiating with Microsoft is one of the toughest things on an IT manager may ever have to do, users and analysts say. But we mean this to help drive a hard bargain.

Remember how Microsoft could change usage rights. For example, might it decide to stop licensing a package on a per-system basis and switch to a per-person plan, as it recently did with Silver Server, its electronic-commerce server software? Negotiate against expected changes.

Secure price protections. Microsoft tests its Upgrade Advantage program as a way to ensure rights to new versions of software. But sometimes users lose those rights when Microsoft ships products late. Ask for a guaranteed price that's good no matter when the package ships.

Know your software buying plans. Don't be persuaded to buy more products "just to be safe," one CIO advised.

Read the fine print on the Microsoft letter. Don't take the local salesperson's "hard" deal. Talk to his managers, then the regional manager, then to Microsoft headquarters, especially if yours is a sizable company.

Know your numbers. If you're 1,500 users or down, that's 1,500 licenses. That's a major concession at Microsoft," said Eric Singleton, CIO at Columbia Energy Group.

Be strong. "Microsoft does not want to negotiate anyone new as much as traditional enterprise customers, such as IBM, Oracle Corp. and SAP AG," said Gartner Group analyst Mary Welch. But several CIOs said they have gotten deals at least close to what they originally sought by making lengthy negotiations.

Overall, 67% of the IT buyers responding to the Computerworld survey said Microsoft is no more difficult to negotiate with than other software vendors, but a significant minority (30%) said negotiating with Microsoft is more difficult.—Jim S. Nash

Key Microsoft contracts

Standard User

Target user: 5 to 1,000 PCs
Term: Two years; no ongoing commitment to Microsoft required

Small 4.0

Target user: More than 1,000 PCs
Term: Two years; decentralized purchasing

Enterprise Agreement

Target user: More than 500 PCs
Term: Three years with option for a fourth; centralized purchasing; commitment to standardize on Microsoft products

If negotiated well, an Enterprise Agreement is a good deal for user companies that have clear software upgrade plans and want to standardize on Microsoft products for both PCs and servers, users and analysts agreed.

But some users reported that Microsoft salespeople have tried to push the Enterprise deal on them, coaxing them to overspend on Microsoft products.

"They do want to sell that contract," said Danny Perkins, an IT manager at Bristol Hotels & Resorts Inc. in Dallas. "It happens to make sense for us, but Microsoft plays on people's ignorance if they don't understand it."

Microsoft is "tougher than most" to negotiate with, said Eric Singleton, CIO at Columbia Energy Group in Herndon, Va.

The vendor's dominance in the operating system market means it's unwilling to bend where other vendors might, Singleton said. "You're not in a 'walk away from the table' position. You know it, and they know it," he said.

Professional negotiator Marlene Bauer agrees that Microsoft is hard to bargain with because of its market power. As an area director for International Computer Negotiations Inc. in Portland, Ore., Bauer has helped many users hammer out licenses with Microsoft.

"You can just see how they're squeezing more and more revenues out of basically the same deals" that users signed the last time they negotiated with Microsoft, she said. Some Microsoft contract terms are just tough luck for users.

For example, in both Select and Enterprise contracts, users are required to commit to deploying a specific number of desktop licenses for a given piece of software. If they install more copies, they must pay additional fees. But if they overestimate and pay for more than what they use, Microsoft gives no rebates.

Also, Upgrade Advantage is an option that lets users buy future software upgrades at a locked-in price — as long as the new version ships within the period

covered by the contract. If Microsoft ships the product after the contract expires, the upgrade rights are worthless.

"We ran into that problem with Windows 98," Gasparro said. Microsoft continually pushed back the ship date for Windows 98, which was originally supposed to ship last year. "It got pushed right out of our contract cycle," he said.

Boit's advice? Users should "think about the risks of [whether Microsoft will

be] releasing software on time." He added that Microsoft isn't the only vendor that is late with products.

Licensing is a big concern for Microsoft, as it must show Wall Street consistent sales growth even as it saturates markets.

Microsoft must feed a "\$4 billion beast," said Jeremy Sammes, an analyst at The Butler Group, a consulting firm in London. Creating license terms that

bring in more revenue is one way "to keep that momentum going," he said. □

Assistant news editor Mitch Betts, staff writer David Ornstein and senior editor Sharon Gaudin contributed to this report.

Microsoft's dominance in operating systems represents a new threat to the national security of our information-based society, Paul A. Strassmann warns. Page 72

DECEMBER 7, 1998

GLOBAL INNOVATORS SERIES

The SKILLS Struggle

The IT skills shortage has become a global epidemic. Many countries report skyrocketing salaries and high turnover as IT workers become a scarce commodity. And CIOs throughout the world warn that national IT sectors will lose their competitive edge and economies will suffer if the shortage is not addressed. Clearly, companies need the next generation of IT employees. Fortunately, a few forward-thinking corporations and governments have started to do just that. Read about the efforts and gather some vital evidence of the global staffing shortages in the December 7th Computerworld.

COMPUTERWORLD

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July 1998

Concurrent-user rights eliminated for Windows NT Terminal Server Edition; users required to have both NT Workstation license and NT Server Client Access License

2000*

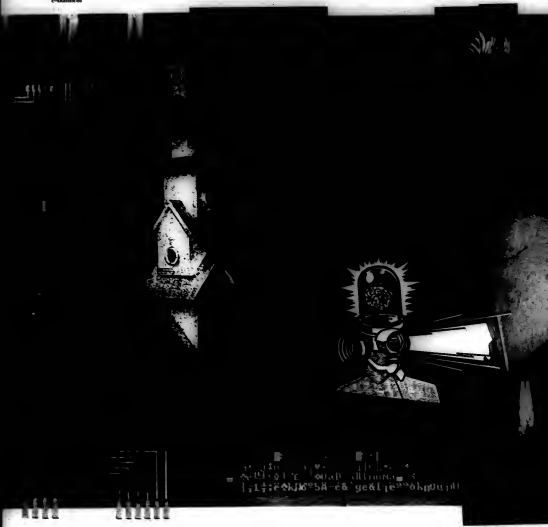
• Microsoft likely to prohibit concurrent-user licenses for all remaining BackOffice products

• Microsoft likely to unbundle its Web server from NT and charge separately for it

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Site targets ex-military personnel for IT jobs

By Barb Cole-Gomolski

A PROGRAM being tested now could give companies access to what traditionally has been an untapped source of information technology workers — military personnel who are about to return to the

civilian workforce.

The Military-To-Work program is accessible via an Internet site (www.careers.com), on which companies can post jobs in the communications and IT fields. Because it's Web-based, military personnel can access the jobs database

from any military base or ship.

Today, military personnel with Web access can hunt for technical jobs on an assortment of private recruitment sites. However, they will be encouraged to use the jobs database as part of the military's formal transition assistance program,

which is supposed to help them reenter the workforce.

Unlike other recruitment sites, the Military-To-Work program offers military personnel training designed to help prepare them for available jobs.

The site, developed by the Communications Workers of America (CWA) union with a \$418,000 grant from the U.S. Department of Labor, is backed by telecommunications giant US West

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The site aimed at military personnel lists jobs from programmer to LAN network tech.

Communications Corp., AT&T Corp. and Bell Atlantic Corp. The union estimates that approximately 15,000 individuals with telecommunications skills leave the military annually.

During a pilot phase that is to last until March, the site will include postings for customer service representatives, LAN/WAN network technicians, central office technicians, cable installation technicians and telephone system installers.

The long-term goal, however, is to broaden the job offerings to include more traditional IT posts such as database administrator and programmer, according to Steve Hill, employment and training administrator for CWA in Washington.

Use of the Web site isn't limited to companies that have collective bargaining agreements with the CWA. Nor is it necessary that the jobs posted be union jobs. Companies may be charged a nominal fee to post a job on the site, Hill said.

Corporate IT recruiters have applauded the plan. "This is a group of people that are almost impossible to reach [through traditional recruitment efforts]," said Lisa Clavey, senior recruitment manager for IT at Sears, Roebuck and Co. in Hoffman Estates, Ill.

Indeed, the government doesn't allow companies to recruit on military bases, and it doesn't host job fairs for people returning to civilian life.

Clavey said most technical workers coming out of the military probably couldn't step right into IT jobs. She did confirm, however, that Sears would be willing to put them through a training program to bring them up to speed — just as it does with recent college graduates it hires. □

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Understanding the OLAP space

Evaluate user requirements before choosing one of the following OLAP styles:

- **Relational OLAP (ROLAP):** Used for large departments or groups because it supports large amounts of data and users. Data is stored in a relational database – a database that organizes information in tables and allows the data to be accessed easily. ROLAP requires less technical training for the end user.
- **Desktop OLAP (DOLAP):** Designed for low-end, single, departmental user. Data is stored in cubes on the desktop. It's like having your own spreadsheet. Since the data is local, and users don't have to worry about performance hits against the server.
- **Multidimensional OLAP (MOLAP):** Targeted at groups of users because it's a shared environment. Data is stored in an exclusive server-based format. It performs more complex analysis of data.
- **HOLAP:** Hybridization of OLAP, which can include any of the above.

Source: Ingersoll Analytics

Q&A

OLAP

DEFINITION: Online analytical processing (OLAP) describes a class of tools that can extract and present multidimensional data from different points of view. Designed for managers looking to make sense of their information, OLAP structures data hierarchically – the way managers think of their enterprises. OLAP functions include trend analysis, drilling down to more complex levels of detail, summarization of data and data rotation for comparative viewing.

Viewing data from all angles

By Carla Catalano

FOR MANY business managers, online analytical processing (OLAP) turns flat business data into multidimensional information in a database.

Multidimensional describes data that's organized in an array rather than in a flat grid. That array is like a cube, with each side a dimension that represents a business-driven factor such as time, product, quantity or region. The cubes can be rearranged and rotated to highlight specific comparisons and relationships. Most OLAP tools enable managers to drill down to more complex levels of detail. When drilling up, OLAP can summarize and aggregate data.

Dealing with dimensions can help information technology managers understand their business, says Howard Desner, vice president and research director at Gartner Group Inc.'s Electronic Workplace Division in Stamford, Conn. For example, a multidimensional application shows you where you are so you can look at a subset of information and analyze a problem or define a trend. That helps end users better understand their business data.

OLAP makes sense for a lot of applications because it gives you a top-down view of your business. Think of the structure as a grocery

store, says Don MacTavish, senior research analyst at Stamford, Conn.-based Meta Group Inc. All the products are at the top level; underneath, there's cereal and soda; under that, there are types of cereal and types of soda such as Grippix and Cheerios, and Coke and Pepsi. Now, throw in a third dimension such as country, individual retail outlet or time, and you can understand the complexity of a multidimensional equation. You can see how many boxes of Cheerios have sold all day or at 10 a.m. or in a specific store or region.

AT ISSUE
Freedom to analyze data as you choose

To design that type of application, you need to begin with business requirements and work backward. First, you should define what business data end users need to do their jobs effectively. Next, you need to decide which type of OLAP you need (see chart at left). Third, identify data sources and how to prepare data for the user. Then select an appropriate interface for the end user depending on who the user is and the user's needs.

The bottom line is that OLAP gives business users the ability to analyze data from any perspective they want, rather than being forced to rely on canned perspectives generated by someone else. □

Catalano is a freelance writer in Holliston, Mass.

CW: What are you using OLAP for?

KRUEGER: We use OLAP to get the sales data out to area directors, region managers and our broker representatives who are out in the field.

CW: Why did you turn to OLAP?

KRUEGER: For better distribution of information. Our directors used to call in the reports they needed and then we'd mail the reports out to them. Now access to all information is at their fingertips. It's a convenient way for them to pick and choose what they want.

CW: What products do you use?

KRUEGER: We use Cognos PowerPlay (an analysis tool) and Cognos Impromptu (a desktop query tool). Users look for things like product lines, plant shipments, plan operations, spending, sales dollars. Our remote users download data to their desktop, slice and dice information, then they create reports, which help management better.

CW: What are the benefits?

KRUEGER: Rapid retrieval of information and convenience. We are able to manage business better in terms of time and manner. For example, we no longer spend time mailing reports and we don't need personnel to create reports. The users essentially fend for themselves.

CW: Were there any hidden problems?

KRUEGER: It took us about six months to get the product into the users' hands because we had to define the cubes and learn how to use [it].

CW: Could you have done anything differently?

KRUEGER: Not really. We've been using PowerPlay for over two years. It has met all of our requirements. But we do have a wish list. We want a thin client. We'd like a server-based system instead of a client-based one because we need processing power in one location instead of on the client. PowerPlay Web doesn't offer the flexibility we need.

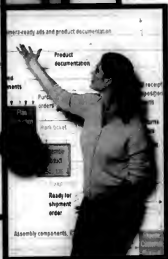
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OPINION

Merger fallout Expect the consequences of America Online's acquisition of Netscape to be profound across the Internet. Here are a few predictions:

- The big winner will be Microsoft. As AOL adds Netscape's 40% browser market share to its own installed base of 14 million customers, it will cut the legs out from under the Justice Department's case. Sure, the government will argue that Netscape was forced to sell out and that AOL's browser is based on Microsoft technology, but the fact remains that customers will have a clear choice of products from two financially healthy competitors. Strange that Netscape and AOL, both of which have provided damning evidence against Microsoft in court, should then do a deal that renders the whole case moot.

The big losers will be users of Netscape's high-end server products. AOL has no interest in selling commerce servers, so it will

hand that task off to Sun Microsystems. Sun is a fine company, but it isn't at all clear how much enthusiasm it will bring to the task. It isn't a bad idea for customers to investigate alternatives.

Chill the rhetoric. Expect a lessening of the belligerent nonsense that characterizes the anti-Microsoft holy wars. AOL is a supremely practical company, dedicated to its own success and not prone to engaging in crusades. If it has to play nicely with Microsoft, it will do so, regardless of who that may offend.

It's open season on consolidation. Guess what? The Net has grown up, and it's time for the big winners to secure their holdings. If you're promoting your company on the Web, the big brands to deal with will be Microsoft, AOL, Yahoo, Amazon and maybe a couple of others. If they can maintain their stratospheric valuations, those companies will use their stock to snarf up the also-rans and build their megastates.

A big question will be whether AOL continues Netscape's open-source code initiative. AOL built its fortune on a closed, proprietary online service and has given in to Internet standards only under duress. If AOL takes Navigator development back inside, it will be a slap in the face to the open-source movement. Just what Microsoft wants.

Paul Gillin

Paul Gillin, editor in chief
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LETTERS

Despite the benefits, ERP systems 'can be hell on earth to actually use'

I MUST READ your front-page article, "ERP user interfaces drive workers nuts," in the Nov. 9 issue.

As our Aussie cousins say, good on you for exposing the ugliest side of enterprise resource planning packages.

Our company endured an experience similar to Hydro Agri's, but we had the good sense to pull the plug on the beast after two frustrating years.

Another equally big problem, and one that was not mentioned in your article, is the incredibly high turnover rate experienced by the ERP systems integrator firms.

We were constantly retraining new integrator consultants in our business model due to turnover. And of course, the integrator firm did not hesitate to bill us for the privilege of training each new consultant.

Barry Jones
Fort Payne, Ala.
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A whole host of users are missing out on the potential benefits of ERP

I MUST FINISH reading your editorial, "Life without users would be so peaceful," in the Nov. 9 issue of Computerworld, and found myself nodding my head in agreement.

Enterprise resource planning systems "can be

hell on earth to actually use."

While there are incredible business benefits to ERP systems, they are not simple. As a result, a whole host of potential beneficiaries are missing out on the promised value.

Nathaniel M. Bruce
Component Software
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I WAS IMPRESSED by the last paragraph in the editorial, "Life without users would be so peaceful," [CW, Nov. 9].

You said, "Somebody's got to

keep pushing for some hard-core honesty from both sides. We cheerfully volunteer."

Most trade journalists, as well as industry analysts, get drawn in by the propaganda dispensed by the major ERP vendors, which is not good for the users at all. The underdogs need another voice. Keep up the good work.

Dave Stein
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Helpful E-commerce insights

PATRICIA SEYDOR's article "What's the secret for success in E-business," [CW, Nov. 9] could have been titled "How to succeed in Any-Business."

I appreciate her many years of providing valuable insight for the information technology/information systems community.

Her book *Customers.com* is on my must-read list.

Anthony R. Dziadzic
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\$1 Net TV devices? Hmm, what's wrong with that picture?

I N YOUR Nov. 2 issue, the article titled "TV may force site tweaks" [Internet Commerce] contains a graphic that was inaccurately labeled. In the test, the article states that 1.4 million units of TV-based Internet devices were sold in '98 and the number will grow to 11 million units by the year 2000.

The graphic accompanying the article clearly indicates the projected NetTV sales figures (for 1998 and 2000) in dollars: \$1.4 million and \$11 million, respectively.

According to my math, that would seem to indicate that these Web-based Internet devices are selling at an incredible \$1 a piece. I was just wondering, where can I get one?

Seriously, I enjoy the publication and look forward to reading it every week. Why else would I have found such a mistake?

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Computerworld welcomes comments from its readers. Letters shouldn't exceed 300 words and should be addressed to Marilyn Johnson,

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Intel
TACKLING LEADING ISSUES IN THE



Intel Tech Buzz

Client Power for Enterprise Efficiency

In business, as in nature, the effect of small, evolutionary changes often cumulates into dramatic new possibilities. Such is the case with changes in the business computing environment.

Advances in Three Categories

Incremental advances are occurring in three major categories of PC software:

- The underlying infrastructure and operating systems services.
- Productivity applications users see and manipulate in the foreground.
- Background services that run automatically and without user intervention.

In the past few years, all three categories have become more complex, integrated and interconnected. Operating systems are more robust, with support for multitasking and helpful platform services. Applications operate as integrated suites, offering visual interfaces and collaboration technologies. Background services include agents and push technologies, and perform such tasks as virus scanning, and message and calendar synchronization.

Today, these trends are accelerating. Within the lifetime of today's PCs, operating systems will become even more advanced and feature rich. Productivity applications will become increasingly versatile and interrelated, making greater use of rich data such as speech and video. Automated background services, such as compression, encryption, system management and personal information agents, will offer even more intelligent services that react to key events and implement IT policy without user interaction.

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Moving forward, each category alone will become more powerful, and all three will operate concurrently. This combination of concurrent applications and services is a natural evolution of business computing. It creates an environment where each user's high-performance PC simultaneously processes multiple foreground and background tasks. Not only does the user multitask among numerous applications, but the PC and the network are also



simultasking, engaged in background processes on the user's and IT infrastructure's behalf. The cumulative effect is to dramatically increase the performance demands on the client PC.

Benefits for End Users and IT

This emerging environment uses the power of the PC to make end users more productive and IT more effective. End users can automate many mundane, time-consuming tasks. For example, automatic agents and filters can sift the Web for information that will give users a competitive edge. Network efficiency, systems management and data security can all be enhanced with automated e-mail compression, message encryption and virus scanning.

Purchasing Implications

In deciding the performance needs of business client PCs, the crucial factor isn't the performance requirements of any single application. Rather,

it's the cumulative effect of having the PC continuously and concurrently execute a growing number of increasingly sophisticated foreground and background tasks.

To take advantage of this rapidly emerging environment, businesses should choose powerful client PCs that can maintain responsiveness even when background processes are simultaneously at work with foreground applications. Desktop and mobile PCs based on high-performance Intel® Pentium® II processors provide an outstanding foundation for evolving capabilities today, and future Intel® processors will further enable these capabilities tomorrow.

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It's time for IT to get in Washington's face

Allan E. Alter

It's time corporate IT became a Washington insider. Let's hit up our CEOs for money to hire a lobbyist. Lord knows we need one. We know more about power cords than the corridors of power. We control billions of dollars of spending but still don't know how to defend our common interests.

And we had better learn. The Washington woods are full of wolves; we can't afford to look like sheep.

Take the laws governing contracts. For years, software vendors have been hustling to amend the Uniform Commercial Code into a devil's playground. If they have their way, you'll lose your warranty if you change the software. Add an add-on, and you'll lose your warranty. If you test a software package and find nothing wrong, too bad if it later turns your data into Turkish taffy — you'll lose the warranty. But should you cross the line on some ridiculous shrink-

Asking for a lobbying budget isn't begging; it's looking after your interests.

wrapped software license provision, the vendors want to chain you to a rock and eat your liver.

Things also are dicey on the H-1B visa front. Companies are cutting back on important projects — projects that will improve competitiveness and generate jobs in the long term — because they can't find people with the right skills. Corporate IT needs more foreign guest

workers. Members of Congress are willing to hand out more temporary H-1B visas but are adding complex stipulations — in the name of protecting U.S. workers — that will make it tougher to recruit the foreign workers you need.

And how did we let the vendors get away with the so-called Good Samaritan Act, which was signed into law last month? It's supposed to protect users and promote information sharing among companies trying to fix their year 2000 problems. But its loose wording makes it "an escape hatch for systems developers," as one attorney told Computerworld.

Hey, money talks. In 1996, high-tech companies spent at least \$40 million on lobbyists. Their CEOs have a powerful, Beltway-based organization — the Information Technology Association of America — looking after their interests.

The user side? A variety of user groups and professional societies, getting by on table-scrub budgets, after-hours volunteers and permission slips from their bosses.

All that's too bad because IT is becoming political football. We need to ensure that telecommunications reform opens up local competition. There's mis-

chief afoot in California, where vendors have tried to raise the bar on stockholder lawsuits. There are many issues to watch for in electronic commerce, including Internet security, taxes and privacy. (Does anyone really believe the Internet's newly minted tax-free status will hold?) And let's not forget the Securities and Exchange Commission's oversight on year 2000 issues.

As columnist Paul A. Strassman has pointed out [CW, Aug. 3], now that our work is too important to ignore, we can expect more federal regulation on security, safety and software reliability. How will we respond?

Corporate IT now has a big political agenda but not the will to do what's needed: organize a single, powerful lobbying group and get our CEOs to kick in the money to support it. I know CIOs feel uncomfortable hitting up the boss, but they shouldn't. Today's CEOs understand the importance of technology and a favorable political environment. Asking for a lobbying budget isn't begging. It's looking after your interests. Don't be sheep. Don't baaaaaa-ck down. □

Alter is Computerworld's department editor. Managing. His E-mail address is allan_alter@computerworld.com.

The Net is mission-critical — and we aren't ready

John Gantz

Even with all the hype and talk about the importance of the Net — in its guises of the Internet, E-mail, intranets, E-commerce and extranets — it has still moved more quickly to mission-critical status than I think anyone has realized in corporate IT.

In a study last year, International Data Corp. (IDC) discovered that U.S. IT managers considered 40% of their Windows NT client/server applications mission-critical. In a more recent study, IDC discovered that the same community gave E-mail 4.5 points on a 5-point scale, where 5 was "extremely critical to business activities." Extranets were rated 4.3. Five years ago, applications such as those wouldn't be seen as something that could shut down factory floors or darken office buildings if they went down.

I don't think people are calling activities mission-critical that aren't — this isn't an overstated-assessment problem like grade inflation. These applications are mission-critical. IT has become the heart of most business processes, and the Net is fast becoming the clearest window to them. That's a bit scary.

The reason isn't because the Net is a stateless medium or that hackers can worm through firewalls or that network response times can be capricious. The reason is that people don't know how to make the transition. Asking them to do so is a little like asking a Cobol programmer to do real-time programming. The spirit is willing, but the skills, experience and tricks of the trade are weak.

That's the conclusion reached by attendees at a workshop at IDC's Internet Executive Forum this fall. The consensus was that most Web sites are developed by teams that are more business- and speed-driven than traditional IT folks but that the IT folks have the process-driven skills needed to make applications bullet-proof. Because most mis-

sion-critical Web applications need access to back-end systems, IT folks are critical in delivering the full application.

There are other problems dealing with the Net's rise to mission-critical status. Some of these relate to the time and energy it takes to integrate with back-end systems, some to the lack of tools from vendors and some to the lack of guidelines on how to be successful. They just haven't been enough case studies and business practices to meld into a common body of knowledge.

But our experts felt that the true gating factors were culture and training. Plumbing issues are important, but they aren't the main issue as we start to run our businesses from the Net.

So you're going to see the following:

- A booming busi-

ness in consulting and outsourcing of Net applications. Most vendors already have branded products in mission-critical services.

- Some well-publicized project failures — where development expectations weren't met.
- Personnel raids on the companies that learn how to do it right.

• Vendors starting to sell some point products around high-availability Web servers and networks along with gold-plated service contracts.

At the same time, many of those collaborative applications (40% of today's Internet server loads) and even some of the publishing applications (30%) running in companies today will tumble over into mission-critical. Then the fun will begin.

Say, does anybody know where the documentation is on that human resources intranet? They just changed the 401(k) rules and we have to run payroll... □

Gantz is a senior vice president at International Data Corp., a sister company to Computerworld in Framingham, Mass. His E-mail address is jgantz@idcresearch.com.

The spirit is willing, but the skills, experience and tricks of the trade are weak.



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Bill Gates and the end of innocence

Galen Gruman

With his videotaped statements in the Microsoft antitrust trial to the effect of, "I don't threaten, I don't remember and I certainly don't understand the question," Bill Gates now has joined an infamous circle:

Richard Nixon ("I am not a crook"), Ronald Reagan ("I don't recall"), Bill Clinton ("I don't know for sure") and Big Tobacco executives (variations on "cigarettes are not proven to be addictive or cause cancer" and "we don't target children").

From the tapes, you'd never believe that Gates could run the local drugstore — much less a global company that has set the technical direction for most of the computer industry. (Gates later claimed the Feds selected the videotape clips to show him in a falsely forgetful light. If so, his bob-and-weave responses gave them plenty of ammo.)

Gates' performance — like those of



I bemoan the fact that we seem to have few real heroes.

many of his accusers on and off the witness stand — is showing everyone that the high-tech industry is as slippery, childish and cynical as the rest of the world. Although Gates insists still that the computer industry is different, and is using that claim to justify his competitive practices, who can honestly believe that anymore?

It's not just Gates, of course. Oracle's Larry Ellison enjoys public tantrums and fights. A series of executives at Apple Computer, which has long marketed itself as an idealistic standard-setter, has

reneged on partnerships and otherwise played fast and loose with the truth. Sun Microsystems executives have all but admitted that they want the kind of worldwide dominance with Java they criticize Microsoft for achieving. I almost miss the bygone arrogance of Philippe Kahn and the CDs his Portland International used to distribute of him playing jazz. At least it was a personal pretension.

The disingenuous, evasive and contrivedly coy claims from people like Gates will have the same kind of profound effect that Nixon, Reagan and Clinton had on politics: the creation and support of indifference and resignation.

Think I'm exaggerating? Look at the reaction of IT leaders. Computerworld reporters find, time after time, that users wish the government would leave Microsoft alone. Even if some Microsoft tactics are troubling, users love the free bundles and stability of a dominant, near-monopoly operating system. Will they still hold that view if Microsoft does create an unassailable hegemony? I doubt it. But like the year 2000 crisis was 10 years ago, that will be a problem for IT execs, not them.

Polis show the trial hasn't hurt the

public's mostly positive views of Gates and Microsoft — just as Clinton has been unaffected, and to fact has been buoyed, by his dishonesty and severe lack of self-control in the Monica Lewinsky affair. People clearly don't expect integrity from their leaders.

High tech was different from the traditional snakes-and-ladders industries, at least for a while. Its competition really was good for humankind. It encouraged "cooperation," in which people competed but also supported one another, like friends on opposing local sports teams. Events such as the West Coast Computer Faire and Comdex were vibrant, personal celebrations, not just business events.

For years, I've been struck how many people inside and outside the industry have believed that the high-tech community was creating a better model, to my weaker moments, I believed it, too. We inspired the world. A disastrous reality is, of course, better than believing in fantasy. I'm not advocating we believe in false heroes, but I bemoan the fact that we seem to have so few real ones. ☐

Gruman is Computerworld's West Coast bureau chief and opinions editor. His E-mail address is galen_gruman@cw.com

Why are corporate Web sites so hard to use?

David Moschella

For people like me, who are both self-employed and heavy travelers, the nationwide expansion of Kinko's has been a godsend. Because I'm a fan, I feel much better about using the office-services giant as an example of one of the most persistent and annoying flaws in many corporate Web sites.

I was in Jacksonville, Fla., recently and had the unexpected need to print overhead transparencies for a next-day presentation. Naturally, I entered kinko.com to find the nearest facility. What happened next is instructive.

The first screen was a useless graphic that invited me to click and "enter the Kinko's site," as if I were passing through a security system. That first click resulted in eight circles containing various Kinko's information, one of which was marked "Locations." I clicked on that, only to get a screen of brochure text that totally confused me until I scrolled down and found a locations dialog box.

Click 3 opened the dialog box, and

then it asked me to indicate whether I was looking for a U.S. or international site. With click 4, I finally got a search bar where I could type in "Jacksonville, Florida," which I then submitted and learned that there were four Kinko's in the area. Click 6 got me the directions.

Clearly, the initial screen should help me find the nearest Kinko's location, and what took six clicks could have been done in a maximum of three. But the real point is that the Kinko's site is typical. It continues to amaze me how many Web sites force us to wade through various screens to get what we really want.

Just look at what some of our biggest computer companies do.

If you went to Hewlett-Packard's hp.com last week, you found a story on "HP and the Euro," but you didn't even see the word "printer." Let alone "LaserJet." Similarly, ibm.com is like a little newspaper where we're invited to have a "chat about XML" but never see "ThinkPad."

What's really strange about that is that it's so easy to make things better. Just imitate the portals. Yahoo Inc. and its competitors are in the business of getting information to their customers as efficiently as possible. To do that, they take maximum advantage of their initial

screens by having as many as 50 textual entry points. In contrast, many companies (check out the Big Three automakers) still tend to begin with useless and time-consuming

graphics, surrounded by a handful of vague entry points.

Given how much money is spent designing most corporate sites, the lack of emphasis on user utility remains startling. Too many companies continue to build Web sites that are like corporate lobbies, designed to entertain those in waiting.

Others seem to think that the Web has turned them into publishers, obliging them to provide catchy news and features. The fact that we are busy and just want some specific information hasn't really sunk in.

Instead of thinking about your home page as if it were an electronic coffee table, pretend that it's a touch-screen cash register at a McDonald's, where all the emphasis is on speed and simplicity. Or better yet, imagine that you're building a portal, not just to your organization, but to your entire business ecosystem. Your visitors will thank you for it. ☐

Moschella is an author, independent consultant and weekly columnist for Computerworld. His E-mail address is dmoscchella@earthlink.net.

The fact that we just want some specific information hasn't really sunk in

The Massachusetts Tech Corps, Inc. is an initiative of the Massachusetts Software Council, Inc.

JOIN THE MASSACHUSETTS TECH CORPS

A Partnership Between the Information Technology Industry and Education

Volunteering with the Massachusetts Tech Corps

Why should you become a volunteer with the Massachusetts Tech Corps?

Because the Mass Tech Corps has a special relationship with Technology Coordinators in more than 60 schools districts across Massachusetts, the Tech Corps is able to "plug" you in to interesting projects with schools that are ready to use your expertise. Technology in schools is still a "needy" area, and the expertise you bring will produce dividends right away.

Whatever your skills are, schools can use them. Schools need your help with technology planning, technical support, networking, staff training, classroom support, public relations, website development, resource acquisition, as well as other areas.

Volunteers are needed anytime during the day as well as evenings and weekends. In one school district, volunteers manned a computer lab at one of the elementary schools so that it could stay open two nights a week. The lab is now used by students, parents, teachers and community residents.

The Massachusetts Tech Corps is working on an interactive website so that volunteers will be able to help schools on line. In the meantime, we urge you to sign up on our website, www.masstechcorps.org and offer your help to bring all Massachusetts schools into the Information Age.

The Massachusetts Tech Corps was launched in January, 1995 under the auspices of the Massachusetts Software Council. The Tech Corps was designed to bring individuals with technical expertise into the schools to assist with technology related projects. Since 1995, more than 800 volunteers have helped member school districts in areas such as:

- classroom instruction
- local area networks
- public relations
- resource acquisition
- staff training
- technical support
- technology planning
- wide-area networking

For the 1998-99 school year the Massachusetts Tech Corps has 60 member districts and five Mentor Districts. Mentor Districts have been designated because of their leadership in the use of technology and volunteers to support teachers and learning. These districts also offer their expertise to help other Tech Corps districts as the need arises.

The Massachusetts Tech Corps is seeking volunteers for member districts. The list of districts needing help is listed below. We encourage you to register electronically at: <http://www.masstechcorps.org>. Additional information about the Massachusetts Tech Corps is available through this Website.

The Massachusetts Tech Corps provides you with a way to share time and talent with your local school. Through the Tech Corps you are able to give something back to your community and have a positive impact on kids, schools and education in Massachusetts. As a Massachusetts Tech Corps volunteer, you will be part of a statewide organization. You will be able to meet with other volunteers from around the state at Tech Corps events, learn about projects in other districts through our newsletter and website, and feel part of an organization that is making a difference.

We look forward to hearing from you!

Volunteer your time and be part of an organization that helps Massachusetts students.

Visit our Web site and register online at:
www.masstechcorps.org



Massachusetts Tech Corps Districts 1998-1999

Member Districts

- Acton-Bosborough Regional School District
- Hamilton-Wenham Regional School District
- Hingham Public Schools
- Hudson Public Schools
- Lexington Public Schools

Member Districts

- Andover Public Schools
- Arlington Public Schools
- Ashland Public Schools
- Berkshire Hills Regional School District (Great Stockbridge/Stockbridge/West Stockbridge)
- Beverly Public Schools
- Blackstone Valley Vocational Regional School District
- Boston Public Schools

Member Districts

- Bourne Public Schools
- Bridgewater-Raynham Regional School District
- Brookline Public Schools
- Burlington Public Schools
- Cambridge Public Schools
- Canton Public Schools
- Cohasset Public Schools
- Concord-Carlisle Regional School District
- Douglas Public Schools
- Dover-Sherborn Public Schools
- Duxbury Regional School District
- East Bridgewater Public Schools
- Everett Public Schools
- Falmouth Public Schools
- Falmouth Public Schools

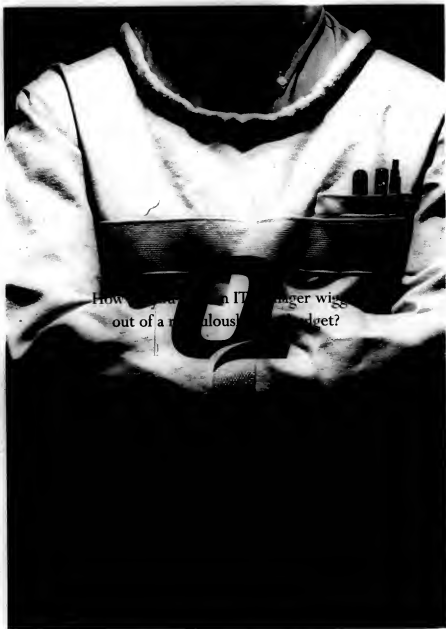
Member Districts

- Gloucester Public Schools
- Haverhill Public Schools
- Haverhill Public Schools
- Ipswich Public Schools
- Lynnfield Public Schools
- Malden Public Schools
- Mansfield Public Schools
- Marlborough Public Schools
- Marcomm Regional School District (Middleton/Tungfield/Barnfield)
- Mashpee Public Schools
- Medfield Public Schools
- Medford Public Schools
- Meriden Public Schools
- Milwaukeean Regional Vocational Technical School
- Natick Public Schools
- Newton Public Schools
- North Andover Public Schools
- Northampton Public Schools
- Worcester Public Schools

Member Districts

- Northbridge Public Schools
- North Reading Public Schools
- Peabody Public Schools
- Penicook Regional School District (West Newbury/Newbury/Grotonland)
- Plymouth Public Schools
- Quincy Public Schools
- Sagadahoc Public Schools
- Schuette Public Schools
- Weymouth Public Schools
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The lightest notebook from Compaq, weighing only 4.4 lbs.

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- Microsoft® Windows® 95 pre-installed
- 3-year limited warranty*

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\$2,009*

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- 24X Max CD-ROM*
- ATI RAGE PRO TURBO 2X AGP
- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
- Compaq V55 15" (13.7" viewable) monitor
- Microsoft Windows NT Workstation 4.0 pre-installed
- 3-year limited warranty*

\$2,429*

- Intel Pentium II processor 450 MHz
- 64 MB SDRAM
- 10 GB* SMART II Ultra ATA Hard Drive
- ATI RAGE PRO TURBO 2X AGP
- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
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- Microsoft Windows NT Workstation 4.0 pre-installed
- 3-year limited warranty*

- ELSA Gloria Synergy+ or Compaq PowerStorm 300 graphics solutions
- Rack Mount Capable
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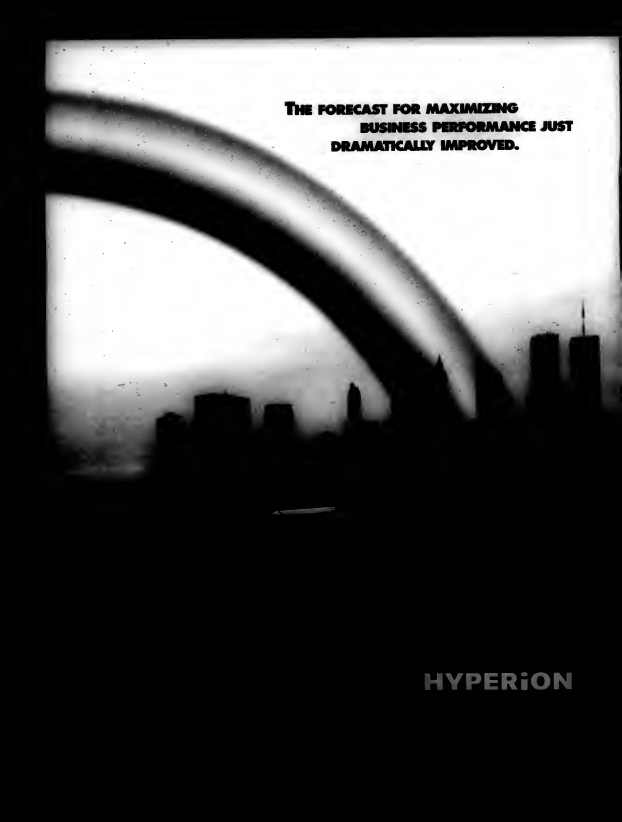
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Briefs

E-commerce stocks down

Don't expect to see a lack of a lot of investing activity in the e-commerce sector during November, warns Credit Suisse First Boston analyst Bill Barnhart. With another decline in stock values during the past three months, most investors "are standing by the sidelines biding their wounds and thinking about how they are going to reposition their portfolios at year-end," writes Barnhart in a recent newsletter.

Leading players include Chadler Corp. and First Virtual Holdings, following better-than-expected financial results at last week's earnings. Leading losers include Open Market, which in October announced an expected net loss three to four times greater than that estimated by Wall Street.

AT&T 72X costs up

AT&T Corp. has raised its latest year target spending to about \$700 million, up from an estimate of about \$500 million in May, a spokesman said. This year's costs for payment to video units shipped by 500 million, to 500 million, the spokesman said.

However, the company said in a Nov. 13 quarterly filing with the Securities and Exchange Commission that an added \$75 million is needed for capital expenses this year. The SEC statement says that next year, AT&T will spend \$700 million, including \$75 million in capital costs.

CIO migration

Ronald J. McRoy, senior vice president and CIO at The Gap Boys — Men's, Men's & Jack, an online store chain based in Philadelphia, has joined Century-based Infos International Corp. as executive vice president and CIO. McRoy, who will oversee information technology activities for the latter's 1,500 customers, previously held IT positions at Liberty International, Home Center, Hasty Hubs and Fred Meyer Inc.

There is Intelligent Life on the Web

► Banking-info company making definitive shift into online ventures

By David Orenden

FOR "THE BANK RATE MONITOR" and its parent company, Intelligent Life Inc., forsaking their print heritage was much simpler than giving up their core business of tracking fees and rates on 400 financial products from credit cards to money markets in 124 U.S. cities.

That's because their traditional newsletter subscriber base of banking professionals has been moving rapidly to electronic news and data sources. Meanwhile, an increasing number of consumers are banking and buying cars online. And in the Internet environment, both groups expect their information to be updated frequently and to be free.

So the 20-year-old company



in North Palm Beach, Fla., went online three years ago. Then, approximately 18 months ago, it decided to focus solely on its Internet ventures, and the site has grown substantially since then.

Last month, it reported to million page views, up from 600,000 per month in 1997.

Its flagship site, Bankrate.com, is embedded into sites such as BusinessWeek, Forbes Digital, Quicken.com and Smart Money Interactive. In May, Intelligent Life launched a site for young adults called The Whiz.com.

But the key to Intelligent Life's success will be whether it can continue to win partnerships that use its research on sites where consumers and professionals are doing business, said Bill Doyle, an analyst at Forrester Research

Inc. in Boston.

Bankrate.com's best partner ships will be those it has with Auto-By-Tel, Realtor.com, Car-buyer.com and others where transactions are close at hand, Doyle said. Online consumers aren't looking for a good read so much as tools that make their lives easier, he said.

Few media companies, including some of the most aggressive players, are making money on the Web, said Michael F. Smith, managing director of Northwestern University's media management center in Evanston, Ill. The Internet is still too immature to provide advertisers with useful demographic information, he said.

For most media companies, "if you've got a print franchise that's making money, you're nuts to bog it," Doyle said. But Intelligent Life, page 42

• Celestial Seasonings revamps Web site, avoids channel conflict

Will Web replace catalog sales?

By Jaisukumar Vijayar

A MODEST, IT-LED Web-commerce initiative launched earlier this year is snowballing into a corporate effort aimed at reducing the cost of the mail-order business at Celestial Seasonings Inc.

In fact, the company hopes orders from its site (www.celestialseasonings.com) will one day make up 30% of catalog sales, which are expensive to procure because of printing and mailing costs. What's encouraging is a market survey that revealed that many of the people who might use Celestial's products — specialty teas and herbal supplements — use the Internet as a major source of product information, a company official said.

Since April, the Boulder, Colo.-based company has been using a Web storefront to educate consumers on its products and sell seasonal items and gifts from its mail-order catalog. Averaging about 1,500 users per day and accounting for 5% of

Celestial's mail-order business, the Web effort has been low key so far, partly because there's been little effort to advertise it. But all that could change soon with the site's just-completed holiday redesign and marketing efforts to drive shoppers online.

The advertising and promotions will include references to the site in marketing and pack-

aging materials. The idea is to see how effective the Web is as a sales channel, said Steve McKown, director of information technology at Celestial.

Like other Web stores, the Celestial site lets users browse through the company's catalog of products, put selected items in a shopping cart and pay securely with a credit card. Items range from teas and



"Our objective is to take the printed catalog and duplicate it on the Web"

herbal supplements to body-care products, music, sleepwear and neck pillows.

Celestial, page 42

Snapshot

YEAR 2000 HERE AND ABROAD

Year 2000 spending in the U.S.



Base: 250 companies

Companies that have adopted year 2000 contingency plans to deal with failure of services



Base: Interviews with 1,680 corporate executives in Europe and the U.S.

Percentage of companies that have begun to identify alternative business partners and suppliers



Base: Interviews with 1,680 corporate executives in Europe and the U.S.

Source: Cap Gemini America, New York

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Leading gainers include Checkfree Corp. and First Virtual Holdings. Following better-than-expected financial results at both companies, leading declines include Open Market, which in October announced an expected net loss three to four times greater than that estimated by Wall Street.

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AT&T Corp. has revised its total year 2000 spending to about \$700 million, up from an estimate of about \$500 million in May, a spokesman said. This year's costs for personnel to write code dropped by \$50 million, to \$500 million, the spokesman added.

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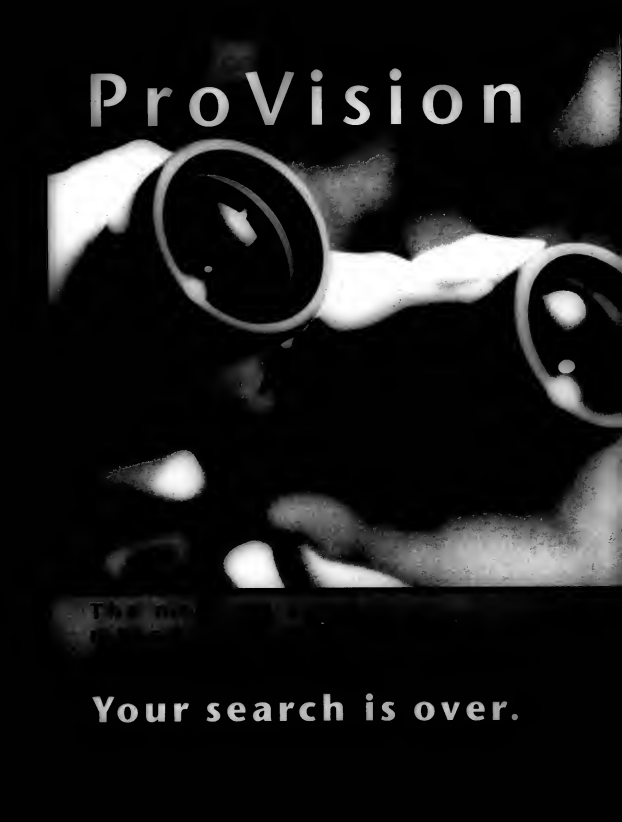
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Percentage of companies that have begun to identify alternative business partners and suppliers



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Management

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Management

Centrally manage your desktop environment through automated configuration management, software distribution and inventory, and a consolidated service desk to enhance efficiency and productivity.

Network

Management

Proactively monitor, manage, and analyze your network and Internet to identify potential bottlenecks, increase uptime, improve response times, and quickly resolve problems.

Asian reps: Net fluency key

By Rob Gush
SANTA CLARA, CALIF.

REPRESENTATIVES FROM Asia-Pacific governments and companies said at a conference last week that education, technical and otherwise, is needed for the

world truly to become "an information society."

"Educational reform is fundamental for governments to popularize lifelong learning," said Shih-Chen Yang, Taipei's representative.

Just as the Taiwanese government

policies have successfully promoted industrial growth, they should do the same with education for the Information Age, he said, adding that Taiwan expects to have computers in all public schools by the middle of next year.

Teaching for the Information Age shouldn't be directed toward just the young, said Shanti Poespoetito, chief operating officer of PT Prawda Cipitakara Informatika, which is building a

microwave-based distance learning system in Indonesia for schoolteachers.

"If teachers aren't Internet literate they won't be able to educate the children," Poespoetito said.

But one speaker noted that students can spend too much time online.

"I hear some professors complaining that their students show up late for class [because] they are all sitting up late doing something on the network," joked Shaye-Ching Lu, president of CEO of Chunghua Telecommunications. □

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Intelligent Life

CONTINUED FROM PAGE 32

Intelligent Life is different, he conceded: "Bankrate just followed its market."

Intelligent Life's CEO William P. Anderson said he's beginning to see the company's move into cyberspace pay off. He said he projects sales of between \$10 million and \$12 million this fiscal year, which ends next June. The privately held company has invested less than \$10 million to build up and market the site this year.

"We are currently approaching [becoming] that rarest of all animals, which is an Internet content provider that makes money," Anderson said. "We expect to be cash-positive by the end of the year." □

Celestial

CONTINUED FROM PAGE 32

"The whole thing really started in the IT organization. Then the catalog manager got onboard, and since then, our marketing group had dedicated an individual to the project," McKown said. "We are now viewing it as an alternate channel to present information and for selling items."

Initially, at least, the Web store will focus on gift and specialty products from the company catalog — products not usually available through distributors — to avoid any channel conflict. "Our objective is to take the printed catalog and duplicate it on the Web," McKown said.

Doing that from a technology standpoint has been straightforward. Celestial turned to its hardware supplier, Hewlett-Packard Co., to plan the system and provide the servers (HP 9000s) to host the Web storefront.

Celestial chose those machines because similar servers used elsewhere in the company have had less than 120 minutes downtime during the past four years, McKown said.

Celestial hired a local applications developer to help develop and deploy the storefront while its IT department employed the services of its marketing and package design teams to design the site.

The upcoming holiday season will provide an indication of just how well such efforts will pay off, said Vernon Keenan, president of Keenan Vision Inc. in San Francisco. □

Internet Commerce

Extranets • The World Wide Web • Intranets

Briefs

Electronic checks

Two vendors have formed a partnership to offer what they claim is the first program that generates customer checks for merchants that sell goods and services over the Internet. Payment-based WebCheck Services Inc. will provide the electronic-check generation service, and Payment-based Inc. in Pleasanton, Calif., will serve as the payment gateway for Internet check processing.

Open Market prices

Open Market Inc. in Burlington, Mass., has revamped pricing on its electronic-commerce software to lure canny buyers. The company's software packages and add-ons are sophisticated options, but "most new costs \$65,000 for what they can get elsewhere for \$40,000," says a source. The company's software is also available for sale on its website, but most of the software is sold on a license basis. The company's software is also available for sale on its website, but most of the software is sold on a license basis.

On TheStreet

TheStreet.com, an online investment news service, has contracted Vision, a New York-based information technology services company, to design and develop new content management, electronic commerce and customer marketing systems.

Percentage of consumers using the Net

U.S.	49%
Sweden	46%
U.K.	24%
Germany	24%
France	17%

Source: Survey of 5,500 residents in the U.S., France, Germany, Great Britain and Sweden

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Benefits of online training management systems

- Automatically notify workers as to which training courses they need to take
- Track who has completed training courses and tests
- Centralize training material
- Make all training courses accessible from a Web browser

New ways to manage E-classes

By Barb Cole-Gomolski

MANAGING STUDENTS in the classroom can be a problem for corporate training managers. Managing them online also can be a problem because many computer-based training (CBT) applications lack features to let them register students and keep track of their training.

CBT vendors are starting to address that need with a type of training management product designed to register users for the courses online, track their course progress and the outcome, then generate reports for all students across the U.S.

For example, next month, WBT Systems Inc. in San Francisco plans to release TopClass 3.0, an application that can convert Microsoft Corp. Word and PowerPoint files — typically used to build instructor-led courses — into Web-based presentations. Those presentations are then tracked in a database, enabling companies to create usage reports.

And Asymetric Learning Systems Inc. in Bellevue, Wash., whose Librarian product already manages online training content — recently announced plans to integrate Librarian with a tool called Ingenium that tracks the skills within an orga-

Michelin links dealers

Web site frees access to accounts, orders

By Carol Shaw

DIFFICULT to do business with?

Michelin North America Inc. realized that perception existed among many of its 1,700 independent tire dealers. In a worst-case scenario, a delivery receipt from a dealer might languish for three or four weeks before getting processed.

Hiring more customer service representatives and getting them to work in teams was one way that the Greenville, S.C., tire maker addressed the problem. Web-based technology was another.

Dealers now can access Michelin's Web Net Web site — named for the 100-year-old inflated "Bibendum" Michelin man — to order products, schedule deliveries, check order status, make real-time inventory inquiries, receive advance shipment notices, create claims, learn pricing and see a national account directory.

And an upgrade — due in January — will let them check their two-year history of purchases in dollars and units, make real-time invoice inquiries, do warranty adjust-

ments and better manage their orders because the system will spot errors in item numbers.

Customers need a PC, a Web browser and a phone connection. Michelin doesn't have to worry about dealers' disparate hardware and software platforms and their widely varying technological savvy. A total of

Michelin, page 45

E-COMMERCE

Holiday news from around the Web world

SEASONAL NEWS from the world of Web retailing:

• Macy's.com formally launched its revamped Web site, with a splashy press event at its flagship Herald Square store in New York. The new

Macy's.com features 250,000 items for sale in what executives called the first major Web retailing effort from a "nationally known reputable fashion-oriented" department store. Parent Federated Department Stores Inc. spun off the Macy's venture as a separate subsidiary; the new site was developed in partnership with IBM. (Macy's.com, San Francisco, www.macys.com)

• Another big Federated name, Bloomingdale's, launched a more modest holiday store, with

Holiday news, page 44

FAQ: The domain naming system

Q: What's the status of the government's planned handover of the Internet domain name authority to an outside entity?

A: The Clinton administration initially wanted to step overseas Internet domain names and infrastructure by this past September. But with no new mechanism yet in place, the government extended its agreement with Network Solutions Inc. (NSI) in Herndon, Va., through September 2000.

NSI has been handling registrations for the popular .com, .net, .org and .edu domains, as well as providing root-server services that allow domain-name lookup across the Internet. The actual handover from NSI is scheduled to come in phases, starting March 31, 1999.

The Internet Assigned Numbers Authority (IANA), which was headed by the late Jon Postel and is at the University of California Information Sciences Institute in Marina del Rey, oversees many of the assignment keys for Internet addresses.

Domain name, page 44



Internet Commerce

Extranets • The World Wide Web • Intranets

Briefs

Guaranteed checks

Two vendors have formed a partnership to offer what they claim is the first program that guarantees consumer checks for merchants that sell goods and services over the Internet. Houston-based Tele-Check Services Inc. will provide the electronic-check guarantee service, and PaymentNet Inc. in Pleasanton, Calif., will serve as the payment gateway for Internet check processing.

Open Market prices

Open Market Inc. in Burlington, Mass., has revamped pricing on its electronic-commerce software so users can buy basic packages and add more sophisticated options later. The latest now costs \$65,000 for sites that sell goods and \$80,000 for subscriptions; the earlier version had more features but cost \$125,000. Those features can be added with various optional modules. The company's LiveCommerce catalog with more features is now \$125,000, but that includes about 15 days of consulting services to help get the package up and running.

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Source: Nielsen Online Research Institute (Nielsen). Last week's survey by GfK Research, Dallas.

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By Carol Sloan

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Domain name, page 44

Domain name

CONTINUED FROM PAGE A3

Q: Who's going to take over from the government and the IANA and NSI?
A: Current plans call for an international, not-for-profit group called Internet Corporation for Assigned Names and Numbers (ICANN, at www.icann.org). It will oversee the numbering system for IP addresses, the Domain Name System and other Internet protocols, as well as root-server systems.

Q: Who are they, and how were they selected?

A: Nine ICANN board members were nominated by IANA and voted in at a meeting in New York last month. Well-known industry analyst Esther Dyson was elected interim chairwoman, and consultant Michael Roberts was hired to be interim president and CEO. Roberts was a founder and executive director of the Internet Society.

They will serve for about a year until the organization's complete bylaws and structure are adopted.

Q: Why is there opposition to ICANN?
A: Several active Internet groups have complained that ICANN isn't responsive enough of the overall Internet community. Specific criticisms include how board members were nominated, whether ICANN meetings must be public (initial rules don't require it) and minutes promptly available, and if there is accountability over ICANN finances from things such as domain registration fees. And there's concern about secret voting and whether ICANN decisions can be appealed.

ICANN has revised its bylaws several times in an attempt to deal with those concerns. But following a public meeting in Cambridge, Mass., earlier this month, the U.S. government has asked it to again work for better public account ability.

Among those criticizing ICANN: the

ICANN TAKES OVER

- The Internet is now an important, global medium and shouldn't be left to the U.S. government to oversee
- The board's current makeup is in a transitional phase, but a starting point is needed to begin the transition away from government control
- No public input into selecting board members
- Not enough accountability for actions or finances
- Inadequate public oversight of activities

Open Root Server Confederation Inc. (www.open-rs.org) and the Boston Working Group, Internet advocates that have submitted alternate proposals.

Q: What does that mean for companies doing business on the Internet?
A: Companies eventually may be registering their domain names with a different organization (although NSI still could be providing some of those services in a competitive environment). There likely will be new mechanisms set up to handle domain-name conflicts, such as companies concerned that someone else is violating their trademark on the Web.

In addition, new top-level domains, such as .firm or .store, may eventually be issued, meaning many companies will likely want to register their .com names with the new top-level domains.

Most important, corporations doing business on the Web want to make sure that the handover goes smoothly, and the new root-server system and other protocols function properly, so that anyone seeking www.thecompany.com on the Internet will be directed to the correct site. — Sharon Megicks

Holiday news

CONTINUED FROM PAGE A3

1,500 selected items for sale. The site features a "Wish List" where Bloomin's shoppers can post things they'd like to receive this holiday season. (www.bloomingsdales.com)
► Lands' End has added technology that lets shoppers create a model of their bodies and then "try on" virtual clothes. My Virtual Model comes from Public Technologies Multimedia in Montreal. The shopper specifies hair color, height and build and then can select clothing to try on the model. (Lands' End Inc., Dodgeville, Wis., www.landsend.com)
► "National Online Shopping Week" locked off Friday and runs through Dec. 4. Backed by sponsors such as MasterCard International and the trade groups Shop.org and the Association for Interactive Media, the event was designed to educate consumers about convenience and security issues. Visitors to a site on the event will be enticed with things such as free shipping and wrapping, discounts and donations to charities. (www.OnlineShoppingWeek.com)

► **Kmart**, the nation's third-largest retailer, has started to sell music CDs and cassettes at www.musicforless.com. The company also has a gift shopping site, That Perfect Gift, at www.thatperfectgift.com. Both sites are available through the store's main Kmart site. (Kmart Corp., Troy, Mich., www.kmart.com)
► The Sabre Group overhauled its Travelocity online travel site for the holiday vacation season to speed airline bookings and offer more hotel information. Air reservations now can be made in three clicks, compared with 12, and the hotel database is adding pictures, maps and reviews. (The Sabre Group Inc., Fort Worth, Texas, www.travelocity.com)
► The Internet arm of TV-shopping channel QVC Inc. said the IQVC Holiday Gift Boutique, the holiday gift area of its Web site, helped the site hit a new record — \$145,000 on Sunday, Nov. 15. IQVC surpassed last November's orders in the first two weeks of this November. (QVC, West Chester, Pa., www.qvc.com)
► Buy.com, known for selling computer goods, has changed its name to Buy.com and added online stores for books, videos and games. (Buy.com, Aliso Viejo, Calif., www.buy.com)

— Sharon Megicks

Training

CONTINUED FROM PAGE A3

nization. The combination was designed to help companies identify needed skills, assign employees to training classes in those skills and track their progress. Corporate trainers at freight carrier BAX Global are using WorldTrak software from Infotrac/American Training International Inc. in San Francisco to help administer a computer-based Lotus Development Corp. Notes course for 3,000 employees.

The software lets BAX enroll and administer users, tracks student perfor-

MORE ONLINE

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www.computerworld.com/news

mance and generates reports using a Web-based interface. The software also helps the company monitor student names, the number of courses taken, pass/fail statistics and particular problems with difficult questions, according to senior training specialist Chris Spiroe.

BAX plans to use WorldTrak to train employees on Windows 98. It estimates that when it finishes deploying the software at year's end, the company will be in a position to save \$50,000 per year on travel expenses and the cost of training software. Because the interface is a browser, BAX won't have to buy separate versions for various operating systems in-house.

Brandon Hall, editor and publisher of "Multimedia & Internet Training News Letter" in Sunbury, Calif., said online training management systems also could help corporate trainers automate many of the tasks associated with training.

For instance, some training management products will automatically prescribe training modules to users based on their job description or date of hire.

"These [online training management systems] could make self-directed learning a reality," Hall said. The software also may allow companies to centralize the management of both instructor-led and CBT programs, he said.

On the downside, integration with other training programs or human resources information systems is still spotty, according to Hall. □

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NEW PRODUCT

LIVEPAGE CORP. has announced LivePage Enterprise 2.0, Internet content-base software for sites with many contributors.

According to the Waterloo, Ontario, company, the software can store, search and manage Extensible Markup Language and HTML content using an industry standard SQL database. The ContentServer feature provides direct publishing from the database to standard browsers. The Manager feature provides drag-and-drop content-based management and import/export, automatic indexing and hyperlink generation.

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Does it make sense to move your workstations to NT 4.0 now or should you hold out for NT 5.0?

10 Smooth Sailing for NT

The U.S. Navy embarks on an initiative to migrate applications from Linux to NT

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Internet Information Server (IIS), along with accompanying Microsoft Web products and technologies, is vying for dominance in the Web server market. Can IIS support complex business applications as well as serve up simple Web pages?

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Should you place your trust in NT's security capabilities, or should you be concerned about its vulnerabilities?

Windows NT World

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From the Editors

Welcome to Windows NT World

BECAUSE WE RECOGNIZE THAT Windows NT is becoming a growing force in organizations large and small, the editors at IDG are banding together to bring you a concise, complete source of NT-related information. This special report, which will reach over 2.2 million readers, is the result of an unprecedented collaborative effort among eight of IDG's foremost publications: CIO, Computerworld, civic.com, Federal Computer Week, InfoWorld, Network World, PC World, and Solutions Integrator.

The content in Windows NT World stems from the experience of editors, writers, and analysts at each of these publications. Our goal is to separate reality from marketing and hype to help you figure out what this operating system means to you and your organization. We hope to aid you in sorting through it, how, why, and where you should use NT, and to lay out issues such as upgrading, integration, management, training, and security.

These issues are bound to become more complex. With NT 5.0 due sometime in 1999, Microsoft's biggest challenge lies ahead. Having shifted emphasis from Windows 9x to NT Workstation as the business client operating system of choice, Microsoft needs to give users good reason for upgrading to NT Workstation 4.0 now, and upgrading again to NT 5.0 in 1999. As the article "NT 5.0 Workstation Is Worth the Wait" on p. 6 illustrates, such an upgrade strategy may not be worth it. On the server end, Microsoft must convince large enterprises that NT can handle their loads and NT 5.0 will have to clear a number of technical hurdles to compete with Unix, minicomputer, and mainframe operating systems. And in our cover story "NT Server and Your Network: A Match Made in Heaven or Integration Hell?" on p. 18 points out, NT must integrate well with other operating systems in order to make it in the enterprise world.

We hope you enjoy this Special Report.

—The Editors



Illustration by [illegible]

NT BRIEFS

Nasdaq Puts Windows NT to the Test

But observers are skeptical about the operating system's prospects in the high-volume trading sector. By Marc Ferranti

MICROSOFT HOPES Nasdaq's decision to base the new version of its trading surveillance application on Windows NT will help make the operating system a credible choice for such high-end applications. But the historic lack of Microsoft products in mission-critical financial trading settings has industry insiders skeptical.

The new application, called MarketWatch, will analyze daily trading on the Nasdaq stock market and is slated to be up and running in 2000. Initially it will have only 25 users, but it must be capable of analyzing over 1,000 transactions per second (tps) — more than current NT applications can handle, according to Nasdaq and Microsoft officials.



performs crucial market surveillance duties, according to Bailer. Nasdaq expects in the near future to trade up to 2 billion shares in one day, so MarketWatch will have to run 800 to 1,200 tps to keep up.

MarketWatch "is a kind of 'proof of concept' for NT."

— Gregor Bailer, Nasdaq

While Nasdaq's trading system itself won't be running on NT, the new version of MarketWatch "is a kind of 'proof of concept' for NT, that it will be able to keep up with our high-volume, mission-critical system," says Nasdaq Executive Vice President Gregor Bailer.

The NT-based MarketWatch will have to "shadow" the exchange, keeping pace as it

"In order to handle such a hefty load, NT and other Microsoft products that MarketWatch will rely on need upgrading, according to Daniel Kossutsky, analyst with International Data Corp., in Framingham, Massachusetts. This means Nasdaq will be dependent on these new versions being timely and stable.

"I say 'Show me,'" says Kus-

netzky. "I wish them well, but if this system isn't going to be finished for another year and a half or more... they're going to depend on Microsoft coming out with new versions of NT, SQL Server, and Transaction Server."

One financial institution that already uses NT hasn't considered basing its mission-critical applications on Microsoft's operating system.

"We have productivity applications running on NT, but not mission-critical applications, like our treasury system," says Joe Veghelyi, manager of system architecture at the Bank of Montreal, which uses a mix of Unix and NT systems.

The current MarketWatch application runs on Tandem servers and Sun Microsystems workstations. The new NT system will run on Unisys Aqueous, typically four-processor machines incorporating 400-MHz Intel processors, Bailer says. The pilot system that is currently being tested uses NT Server 4.0 and beta versions of NT 5.0's "security components," as well as Microsoft's SQL Server and Transaction Server. ■

MARC FERRANTI IS NEW YORK BUREAU CHIEF OF THE IDG NEWS SERVICE.

NT 4.0 FUSION

For an operating system that's soon to be labeled obsolete, Windows NT Workstation 4.0 has gotten a lot of marketing attention from Microsoft lately. In addition to sporadic full-page ads in the Wall Street Journal touting it as the upgrade path to NT 5.0, the company this summer reduced NT 4.0 upgrade costs by 20 percent. In August it introduced a licensing scheme designed to give small businesses upgrades to NT for the next two years for \$38. It also released tools to help users move from other versions of Windows to NT Workstation 4.0, and a kit that packages NT Workstation 4.0 with Service Pack 3, third-party software discounts and deployment tips. Turning its attention to NT 4.0 Server, the company recently posted results from Microsoft labs that showed NT Server 4.0 outperformed Novell's Netware 5.0 by 25 percent. But by the time NT 5.0 is delivered in 1999, the fuss over 4.0 will likely be forgotten, as Microsoft's attention turns to pushing its "next generation" operating system.

SURVEY SHOWS NT'S WEB PROSPECTS

In an August InfoWorld Web server platform survey of 100 companies, 79 percent of the respondents said they were "moving towards Windows NT as a platform." 16 percent said they were exploring alternative commercial operating systems, and 11 percent said they were looking at "open source" or "freeware" technologies.

NT WORKSTATION 5.0 IS WORTH THE WAIT

NT 5.0 is touted as the operating system of the future. But should you install NT 4.0 first? **By Michael Desmond**

With a smaller, faster, and more powerful processor, Windows NT 5.0 has been holding out for NT 5.0 but he didn't want any more Windows 95 stability problems. He decided to take a leap and install NT 5.0. With NT 5.0, he was in for a long wait.

10

SOMEDAY, Jerold Schulman may reap the expected benefits of Windows NT 5.0. But by last March, he'd grown tired of waiting. That's when he broke down and upgraded his three office PCs to NT Workstation 4.0. His network server already was running NT, but the Alpharetta, Georgia-based software reseller kept two Windows 95 machines and one Windows 3.1 system to troubleshoot problems for customers using those operating systems. But enough, Schulman decided, was enough.

"Stability was a driving factor. I'd have to reboot at least once a day under Windows 95," says Schulman. "Assuming you've got the appropriate hardware, I'd think you have to be crazy to be running a loosey-goosey Windows 95/98 operating system."

Schulman was lucky. The Pentium system on his small network were beefy enough to handle NT's hardware demands, and his 16-bit applications still worked despite NT's many software restrictions.

The vast majority of businesses, however, will face hardware upgrades and new software purchases on the road to NT. The expected arrival of NT 5.0 in 1999 raises a yet more daunting question: Does it make sense to upgrade to NT 4.0 now if you'll

running Windows 3.1 and Windows 95 upgrade to NT 4.0. "Probably the biggest reason for the move to NT was for conformity across all the workstations," says Braun. "So support cost was one reason to do that."

Moving to NT 4.0, however, will probably strain your IT department and your hardware budget, too. Microsoft optimistically says that any Pentium system with 16MB of RAM can run NT 4.0. But realistically you need at least a 100-MHz Pentium with 32MB of RAM. And your hardware must be compatible with NT. (See Microsoft's web site at www.microsoft.com/windows/ntworkstation/info/hcl.htm.)

Even if you have the right stuff, some experts recommend buying new hardware.

"When you look at the cost of a new piece of hardware with NT fresh on it and you look at upgrading an existing system with

NT, it's hard to say that buying a new system is not the way to go," says Chris Le Tocq, a software analyst with research firm Dataquest in San Jose, California. "As easy as Microsoft has tried to make it, the risk associated with an in-place OS upgrade is pretty substantial."

Blame NT 4.0's registry, for starters. Its lack of compatibility with the Windows 95 and Windows 98 registries means that you must reinstall applications after the upgrade. Likewise, personalized settings such as application defaults and desktop shortcuts often must be rebuilt. What's more, NT 4.0 lacks Plug and Play and the hardware detection wizard found in Windows 95, making maintenance more complicated.

TIPS FOR THE TRIP TO NT

So you want to migrate to Windows NT? Whitman-Hart technology consultant Jeff Braun has three words of advice: plan, plan, plan.

Take inventory. Check your hardware against Microsoft's Hardware Compatibility List at www.microsoft.com/windows/ntworkstation/info/hcl.htm.

You might have to replace older devices before you install NT.

Say goodbye to some software:

If you have 16-bit DOS and Windows 3.x applications, test them on a stand-alone NT 4.0 workstation. They may simply refuse to run under NT.

Acquire the drivers:

Before you start upgrading, acquire the latest NT-compatible drivers for all the various devices on your PC.

Back it up: Plan to back up and restore data on all your workstations.

Launch a pilot: Select a group of representative systems to test-drive NT for a couple of weeks prior to the big upgrade.

Segment the network:

If installing over a network, upgrade a manageable number of systems on their own segment of the network to quarantine the upgrade traffic. They will help ease troubleshooting.

Take your time: Don't expect a 50-seat upgrade to happen overnight. It could take several days or longer.

Train your staff: Despite the Windows 95-like interface, NT has some unfamiliar features.

"The risk associated with an in-place OS upgrade is pretty substantial."

—Chris Le Tocq, Dataquest

have to upgrade again in about 12 months? Many say that it doesn't. It's no surprise that only a handful of businesses have migrated to NT 4.0, and you should have a compelling reason if you wish to join them.

NT'S CRASH CONTROL

If your Windows 95 systems fall down once or twice a day, an interim stop at the more stable and secure NT 4.0 should provide some relief. Adopting NT 4.0 also might make sense if your business has a hodgepodge of Windows systems, spanning 3.1, 95, and 98. Jeff Braun, a practice leader of information technology engineering at Whitman-Hart in Chicago, says he helped an engineering firm with 46 desktops run-

There are other gotchas. NT 4.0 doesn't work with the FAT-32 file system—a burden if you want to upgrade a Windows 95 or Windows 98 PC that uses FAT-32. And while almost all productivity software for Windows 95 will work under NT, many multimedia titles and games that depend on DirectX—multimedia APIs found in Windows 9x—will not run. The same goes for many DOS-based applications that want direct control over memory and hardware—something that NT's strict protection scheme does not allow.

Considering the limitations of NT 4.0, Braun offers a warning about installing that software: "I would say that you have to do your homework and make sure you are



"Don't do it because you expect magical things to happen. Because usually it won't." Windows-98 technology consultant Jeff Braun on migrating to Windows NT 4.0.

doing it for the right reasons," he says. "Don't do it because you expect it to make magical things happen. Because usually it won't."

provide a centralized structure for keeping tabs on user addresses and identities and which ease everything from e-mail management to network security. Additionally, Microsoft's so-called IntelliMirror technology will allow users to access data and configuration profiles over the network, while the integrated Terminal Server Edition software lets IS managers deploy diskless workstations and other thin clients on the existing network.

NT 5.0 also adopts popular tricks from Windows 95, such as Plug and Play and hardware detection, for those upgrading without the assistance of an IS staff. It offers support for USB peripherals, DVD-ROM drives, and FAT-32. Add DirectX technology, and NT finally matches Windows 95's device and application support.

This heady combination of features promises to make NT 5.0 the best operating system for both the 1,000-seat corporate network and the single-PC home office. The big remaining question for users is: What's the best road to NT 5.0?

Microsoft still touts NT 4.0 as the way to go, noting that applications won't have to be converted or reinstalled as they must when moving from Windows 9x or 3.x. Some analysts just aren't buying it, however. They say the migration to NT 5.0 should not be any more difficult than a move to NT 4.0.

"My recommendation is that if you have your eyes set on NT 5.0, you should be thinking about deferral," Le Teign says. "Because what you don't want to do is install NT 4.0 and then install NT 5.0 on top." ■

MICHAEL DEMMOND IS A CONTRIBUTING EDITOR TO PC WORLD.

NT AND 98: TWO BOOTS ARE BETTER THAN ONE

NOT LONG AGO I GAVE MY 300-MHz Pentium II PC a split personality. Tired of late-night operating system crashes, I installed Windows NT Workstation 4.0 to run my office applications in a reliable environment. Yet I kept Windows 98 on the PC so I could buzz bad guys in an F-18 Hornet when I needed a break from work.

Ironically, my schizophrenic PC has never been so stable.

Dual booting is not just for home office types like me with a penchant for game play. Software developers, help-desk representatives, and IT managers will find dual booting helpful for troubleshooting, user inquiries, telecommuting, and cross-operating-system testing.

You'll need 350MB of disk space to run NT and Windows 98. And if you have an older system or run DOS or Windows 3.x software, NT may not work with your current system. Otherwise, adding NT to your operating system mix can be a relatively simple, two-hour task, provided you plan for it. Here's how:

Assess your system: You should have at least a 100-MHz Pentium and 32MB of RAM, and even then NT might not work on your hardware. Consult the Microsoft Hardware Compatibility List at www.microsoft.com/windows/networkstation/info/hcl.htm to see if your components are supported.

Get the drivers: Round up device drivers for your components before you get started so you have them when NT trips over an unrecognized device. And it goes without saying that you should back up your hard disk.

Always install NT last: The NT Boot Loader utility won't recognize multiple operating systems unless NT is installed after Windows 9x.

Set up your disks: Partition your disk drive into at least two drive letters, one for Windows 9x and one for NT. This allows you to use different file systems for each operating system.

Pick FAT-16: Windows 98 recognizes FAT-16 and FAT-32, but NT sees FAT-16 and NTFS (the NT file system). If you want NT to share disk partitions and application code with your other operating system, you'll have to adopt the lowest common denominator: FAT-16. Although you'll lose some disk space, the compromise ensures that all your operating systems can see all your files.

— Michael Desmond

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U.S. NAVY BRINGS

COMMAND & CONTROL TO NT

Armed with extra security measures, the USS Blue Ridge takes NT on board. By Bob Brewin

IN THE EVENT OF A CRISIS, the commander of the U.S. Seventh Fleet doesn't need to leave the stateroom of his ship sailing off the coast of South Korea to determine the location of U.S., allied, or foreign forces in his area of operations. Instead, on board the USS Blue Ridge, Vice Adm. Walter Doran sits down at his workstation hooked into the ship's Secret Local Area Network, pops open the C2PC (Command and Control PC) application, and views a smart map. This gives him near real-time tracking data of friendly and potentially enemy ships, aircraft, and troops in the immediate area of the Korean peninsula.

Doran's NT workstation is one of the 350 clients installed on the Blue Ridge this year as part of a Navy-wide plan to outfit all its major ships and bases worldwide with NT clients, networked to a mix of NT and Unix servers. The Navy plans to use this global NT network to run its mission-critical command and control system, installing the new architecture on far-flung vessels such as the Blue Ridge and the USS Kitty Hawk carrier battle group and the USS Belleau Wood amphibious ready group, all of which have their home port in Japan.



The Navy is taking part in a departmentwide migration of its applications from Unix to NT. The Defense Department two years ago approved NT as part of its Defense Information Infrastructure Common Operating Environment (COE), which defines the standard software platform for command and control applications. COE originally was a Unix-only platform.

"With this network, we are now compliant with command and control systems being used throughout the Department of Defense," says Doran. "It gives us a tremendous boost in our ability to work with other services."

Cost, training, and ease of use lie behind the Navy's de-

cision to migrate its worldwide network architecture to NT, according to Rear Adm. John Gauss, commander of the San Diego-based Space and Naval Warfare Systems Command (SPAWAR), which developed Global Command and Control System-Maritime (GCCS-M), the Navy version of the Defense Department's new command and control system, and which manages its Navy-wide deployment.

The Navy can buy a 200MHz PC for far less than a Unix workstation, says Gauss. Capt. Roger Hull, the SPAWAR command and control system program manager before he retired earlier this year, estimated that by moving to NT, the Navy could cut its costs to be from one-tenth to one-quarter that of Unix workstations, with overall savings to the Navy in the \$90 million range.

Training sailors to use and maintain PC-based systems is "much easier" than doing so in Unix, according to Gauss, since even casual users now have familiarity with the Win-

dows NT-based environment. Andrew Cox, a SPAWAR systems engineer, says, "we are probably seeing a better return on our investment for user training on NT [than Unix]... When you go over to NT, users are just more familiar with it, reducing the time we spend training them."

The Blue Ridge had a similar experience with its staff users after the NT network went on line. "On the user side, it is a lot easier for someone to sit down and start using different applications [because of the Windows interface]," says Cmdr. Pat Cole, the Seventh Fleet's information systems officer, "reducing the amount of training and dedicated support we have to provide to the staff." But, Cole added, the ship has had to deal with a "not-too-steep learning curve" for its systems administrators. "We're still in the early stages of training our techies... and that's a little more problematic."

While some commercial and even government users have taken a cautious approach to rolling out NT because of security and stability concerns, the Navy has no such fears. Before deploying GCCS-M on NT to operational users such as the Seventh Fleet, Gauss says, the Navy put the system through an exercise of "epic proportions" to test its stability and reliability. Bryan Scurry, the SPAWAR test director, says that during the test the NT-based GCCS-M ran "for more than 1,000 hours, and it passed with an operational availability of over 95 percent. In a couple of instances, that availability hit 98 percent."

While professing faith in the security of NT, SPAWAR found out that it takes a lot of work to properly configure the operating system for the truly secure environment required to protect real-world national security information.

"NT right out of the box is inherently insecure, so we made sure all the 'hot fixes' are loaded. We've taken a defense-in-depth concept to make sure it is locked down," SPAWAR's Cox says. This approach includes immediately disabling the notoriously weak Posix software that comes with NT, controlling access to routers, and putting in firewalls, he says.

Anyone migrating to NT, Cox says, needs to "recognize that NT is not a secure system up front and then engineer a secure environment. We have a seven megabyte document that describes all the things" needed to ensure that NT systems throughout the Navy have the flaws and patches needed to operate in one of the most mission-critical environments in the world.

Two months into the NT shakedown cruise, the Seventh Fleet's Cole says the problems that the Navy has encountered are "what happens when you install any new, complex system. I do know that our users are better off than they were under the old system... and already my systems administrators are impressed on how much easier it is to administer [NT] than our previous system." ■

BOB BREWSTER IS AN EDITOR-AT-LARGE FOR FEDERAL COMPUTER WEEK.

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By Brooks Talley

GROWING

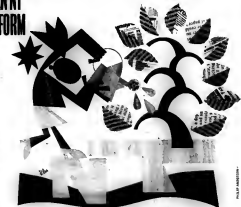
WEB SITE
ON AN NT
PLATFORM

Using Microsoft's Internet Information Server (IIS) and several of its accompanying products and technologies, businesses can operate everything from the smallest Web site running on Windows NT Workstation up to mission-critical Internet commerce sites on huge farms of NT Servers. However, IIS' ability to serve such a wide range of roles can be both a blessing and a curse.

In general, Web sites can be broken down into roughly three levels of complexity: a static site, a site with dynamic content, and a site with complex business applications. While IIS is suitable for these types of sites, the more complex a site becomes, the more IIS buckles under the strain.

BASIC SITES

For organizations that are just starting to put a Web site together or that plan to place relatively manager demands on their site, IIS is a good place to start. The software's appeal for basic, low-volume Web sites revolves around two key points: a low price and the ease of use and administration for novice Web developers and server administrators alike.



An IIS server can be as simple as a low-end NT workstation, and IIS itself doesn't cost anything extra because it comes with the operating system.

Another key attraction for novice users is IIS' built-in support for FrontPage Extensions — a technology that more closely integrates Web servers with content design programs. FrontPage Extensions work in conjunction with Microsoft's FrontPage Web editor to greatly simplify site design. It is eminently possible for someone with no experience

running a Web server or designing Web pages to use IIS with FrontPage to put up a respectable Web page in no time at all.

FrontPage quickly loses its luster, however, as users become more experienced. In order to get things just right, you will need finer control over page layout than FrontPage allows. FrontPage also is well known for scrambling page formatting (especially scripts), so designers who want to be able to work directly with HTML will quickly tire of having the spacing of their scripts ad-

Instinct may lead you to the right server OS. Or, you can always fall back on data, reason, and logic.

Microsoft® Windows NT® Server 4.0 was released two years ago. Today, 63% of networked companies in the U.S. are using it. And, Windows NT Server 4.0 currently outsells all other server operating systems. Why?

First, it covers the basics. Many companies choose Windows NT Server for great file and print. In fact, LAN administrators pick it 3 to 1 over NetWare for their basic LAN OS. But many companies also rely on Windows NT Server for much more than file and print. That's why it's called a multi-purpose server OS, and why research shows that more companies choose it for their intranet platforms and financial internet platforms.

As you make your server OS decision, you know that companies are choosing Windows NT Server because it handles networking and the ever-changing needs of your business environment.



justed for them.

In addition, FrontPage Extensions are notoriously insecure, and a novice administrator may be lulled into a false sense of security after just tuning up an IIS server with the extensions on it. Also, novice administrator probably won't be aware of the need to install the various "hot fixes" for NT's security problems.

DYNAMIC WEB CONTENT

After setting up a basic, static Web site, the next natural step is to add some interactivity and dynamic content to the mix. It's time to work with either Visual Interdev, Microsoft's higher-end site development tool, or something like Allaire's HomeSite.

IIS runs 22.5% of Web sites compared to Apache's 51.8%.

Source: Netcraft www.netcraft.com/survey/

Both are code-oriented, rather than graphical, and both are more appropriate for serious Web development because they don't try to do too much for the developer.

Of course, those sophisticated tools go hand in hand with using some of the more advanced features of IIS. Probably the first thing you will start doing at this stage is using Active Server Pages (ASP) to add some dynamic content to a site. Dynamic content can be simple at first — adding a page counter or customizing a greeting — and eventually it can be more complicated, such as using calendars or dynamically generated JavaScript. ASPs are also ideal for processing forms. They work by embedding a scripting language into what was previously a pure HTML file. They support VBScript and Jscript, Microsoft's implementation of JavaScript, out of the box.

COMPLEX BUSINESS APPLICATIONS

IIS really becomes a ready-to-run platform for line-of-business applications when you use it as a front end to a database. Connecting a Web site to a database opens up a world of possibilities such as order

tracking, data entry, and electronic commerce. ASPs are well suited for this connection, and VBScript has a wide array of data access tools that are both flexible and powerful. Basic operations, such as looking up records in a database, are an absolute breeze to write using Visual Basic, and even inexperienced coders should be able to get along with the help of the sample files that come with IIS. What's more, Visual Interdev has several tools that help make it easier to program database front ends. However, these tools are best suited to simple queries and data presentation — if you're going to do something truly complex, you'll have to code by hand.

Initially, ASPs work well with Microsoft Access as a database, but Access isn't really meant for multitier applications such as a busy Web site. By avoiding Access altogether, you won't have to wonder whether the problems you encounter during development are your own fault or a symptom of Access' limited capabilities. Starting out with Microsoft's more robust SQL Server is a better idea, though it does add to the initial cost.

If your organization is like others that have discovered the benefits of establishing a Web site, you may have a monster on your hands because of the inevitable way Web sites organically grow and because you didn't centrally plan for the final design. Lack

of attention to code reusability and proper programming structure can make it a nightmare to maintain code — all because you started with the dynamic content limited to "Good evening, {username}" and let it grow from there. At this stage, most IIS applications go through something between a rewrite and a major housekeeping effort. Commonly used code needs to be isolated into "include" files that are reused, and likewise with constants that may appear in more than one place.

In addition, you may have learned that VBScript, while powerful, simply isn't fast enough for some processing. That limitation can be overcome by moving business logic into SQL stored procedures and moving slower code into stand-alone ActiveX components. Those components are compiled binary files that act something like Windows DLLs: They include a bunch of logic and an interface for getting to it. ActiveX controls simplify application design by tightly grouping related functions together, as well as performing faster than VBScript.

TRANSACTION SERVER

All of that work leads onto the next step on the slippery slope: using Microsoft Transaction Server (MTS) to further compartmentalize transactions. At first glance, the name suggests something database-centric, but in this context, a "transaction" is everything from creating an ActiveX com-

Where your Web site can go with Microsoft's IIS

Code Used	HTML	HTML/ASP	HTML/ASP	ASP/HTML	ASP/HTML	ASP/HTML
Editor Used	FrontPage	FrontPage/Visual Interdev	Visual Interdev	Visual Interdev	Visual Interdev/Netcraft	Visual Interdev/Netcraft
ActiveX Controls	None	None	Intrinsic	Intrinsic + 3rd party	Intrinsic + 3rd party + custom	Intrinsic + 3rd party + custom
Database*	No	No	Yes	Yes	Yes	Yes
Database Used	None	None	None	Access/SQL Server	SQL Server	SQL Server
Microsoft Transaction Server	No	No	No	No	Maybe	Yes
Scalability to Scale	Excellent	Excellent	Excellent	Very Good	Good	Satisfactory

*Microsoft may only support Oracle 6i, Informatica, and Microsoft

With the right server OS, you can stay a step ahead.
With an industry of applications and support, you can
make it two steps.

Over 4,000 applications are built to run on Microsoft
Windows NT Server 4.0. That's a lot of options. And
over 170,000 people have been certified to help you
with Windows NT Server installation and service.
Furthermore, every major OEM is building solutions
around Windows NT Server. So you can choose from
a wider variety of hardware.

If you choose Windows NT Server 4.0, you're choosing
to run your software and hardware options together.
You're also choosing an industry of support to help
you solve today's problems, and to help you think
about tomorrow's.



ponent to a page load on an MTS-enabled site. MTS provides a safer framework for using ActiveX components, treating each component as an object that can be created, checked out, and ultimately reused. It also allows "packaging" of multiple components to further organize things. However, MTS is a relatively new product, and everyone knows Microsoft's record with new products. In my experience, adding MTS to a site greatly helps organization, but it can result in performance and stability problems.

If you've come to this point, you've be-



ically pushed IIS to its limit, and you may be wondering why you started down this path in the first place. IIS is a great Web platform and has a lot to recommend it, but if you take it to the extreme, the experience can be harrowing. Contending with the complexity introduced by using NT, IIS, ASPs, ActiveX, SQL, and MTS all at the same time can make troubleshooting a real nightmare. You may even have second thoughts about using IIS and fantasize about moving to some sort of Unix-based application Web server. However, these too have their own quirks and issues. Once you've taken the time and effort to come this far, there's a lot to be said for sticking with the devil you know. *

BRIGGS TALLEY IS TEST MANAGER AT INSPURABLE'S TEST CENTER.

FREE WEB SERVER! YOU GET WHAT YOU PAY FOR

By Lynda Radosevich and Dana Gardner

Some users applaud Microsoft's move to include Internet Information Server (IIS) with Windows NT Server at no additional charge because it makes launching a Web site both cheap and easy. But others feel that, free software or not, the elbow grease required to make IIS a stable platform for more sophisticated Web sites is just not worth it.

Proponents say IIS is a great platform on which to build intranets, particularly when you're trying to keep within a budget.

"IIS is the best thing available for intranet development because of the integration with technology like Active Server Pages. And it's free," says Justin Renquist of Renquist Consulting Group in San Francisco, a designer of networks with such clients as clothing maker Levi Strauss.

But while it may be great for intranet development, IIS can be troublesome for companies running heavy-duty electronic commerce sites, which often require links to payment services and fulfillment systems. Microsoft offers Transaction Server 2.0 to handle such transactions, but some users find it is too difficult to make NT, IIS, and MTS perform adequately.

At Sash Communications in Sunnyvale, California, Microsoft's offerings didn't make the grade. The company makes turnkey systems for health insurance companies that sell over the Internet. It needed foundation Web and transaction server technology and was attracted by the price tags on IIS and Transaction Server.

"We were tempted from a business model to go with what was free," says Vip Patel, president and chief executive officer of Sash Communications. But after speaking to IT directors at several companies with well-known electronic commerce sites, the company rejected Microsoft's technology as immature, and purchased Netscape's Application Server instead.

"If you're betting millions of dollars worth of business on it, thousands of dollars for the underlying middleware doesn't make a difference," he says.

TheProShop.com, a golf equipment retail site based in Ft. Myers, Florida, also faced scalability problems with IIS. The shop's Web site receives an average of 44,000 hits per day. Webmaster Greg Parker tried to move from an Apache Web server to IIS 3.0 on NT 4.0 for easier management, but the Microsoft technology stalled and crashed after he loaded 40 of the 50 domains needed. So Parker offloaded e-mail processing to a Linux server and reverted to running Apache on Sun Microsystems' Solaris 2.6.

"IIS was too slow to use, a big resource hog, and required too much RAM and resources to run the Web site," says Parker. "I was disappointed."

Still, some professionals say that companies can use IIS to handle high volumes of transactions and visitors. Ernst & Young Consulting successfully uses IIS to build heavy-duty transactional sites for its clients, says John Parkinson, a chief technologist in Ernst & Young's Dallas office. The trick, he says, is understanding how to hand off transaction processing to another server.

"If you understand how to build the architecture, you can scale as big as you want to go," Parkinson says.

—Lynda Radosevich is a Senior Editor and Dana Gardner is an Editor at Large at InfoWorld.



What's more important: the present or the future?

Both. The companies and partners who support Microsoft Windows NT Server 4.0 are integral to the development of Windows NT Server. So if you base today's solution around Windows NT Server, you'll have a solid migration path for the future of your network and your applications. And you'll know that the industry you are counting on will be with you down the line.

As you take the time to make your server OS decision, you may want more detailed information. We've assembled some new resources for you at the Web address below.



www.microsoft.com/gn/WindowsNTServer/

Microsoft

Where do you want to go today?

Source: US commercial use and sales for 1997. Source: Microsoft Network Operating System Users Study, 1998. LAN administrator preference. © Matrix Intelligence September 1998. Most popular commercial platform for self-hosted corporate, Microsoft Web Server Survey, Q3/98. Most popular network platform. Data Research, Inc. Toronto and Montreal, 1998. Microsoft, "Operational, and more."

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NT Server and Your Network

A MATCH MADE IN HEAVEN OR INTEGRATION HELL?

While NT Server has proven itself useful in key areas, getting it to work with other environments can be frustrating and costly. Planning, third-party software, and outside help can ease the burden. **By Christine Burns**

THERE ARE AS MANY reasons to force a marriage between your existing network and Windows NT Server as there are integration hoops you'll have to jump through to make that union work.

Consider the case of the Drockers brothers. In 1993, Andrew and Matthew Drockers, both IS directors at Turner Broadcasting Sales Inc. in Atlanta, took the plunge with NT Server. Andrew, in charge of network implementation, needed to deploy Microsoft's then brand-new server operating system to anchor a distributed SQL Server database application, developed by brother Matthew to track worldwide advertising revenue for the parent company, Turner Broadcasting. Today, more than 60 percent of Turner Broadcasting's annual income is tracked via this NT application, and the sales department has swapped out its old Digital Pathworks network in favor of 125 NT servers. Despite this successful NT implementation, the honeymoon ended quickly: The Drockers need to continuously come up with new and creative ways to keep the sales force connected to the IBM mainframes at Turner Broadcasting headquarters, also in Atlanta, which has yet to take the NT plunge in any organized fashion.

Or consider Rick Shope, Nations Banc-DPFX's manager of PC technology, who four-and-a-half years ago wanted to wed the 800 high-end desktop PCs at the bank's Chicago-based trading arm to NT Workstation. He had hoped to give the traders a more robust, reliable platform for running office automation and financial applications. But in order to reap the full benefits of that union, he had to make room in his predominantly Hewlett-Packard Unix-based network for NT Workstation's overbearing mother-in-law, NT Server, as the primary network operating system.

And in New York two years ago, soon after the merge of Chase Manhattan Bank and Chemical Bank, the technology infrastructure division of the combined company was on the receiving end of some parental "direction" from upper manage-



ment to make a full-scale commitment to Microsoft's NT Server, in the name of operating system standardization. But a wholesale rip-and-replace of the bank's existing Network network was not cost-effective, so dealing with dueling operating systems has become a daily struggle for Chase Manhattan.

These examples illustrate perhaps the biggest issue facing organizations that have decided to go with NT Server — once you've decided that there's a place in your company for the operating system, how do you get it to play nice with what's already running?

THE NT CHALLENGE

Regardless of how Microsoft's foot got in the door of corporate America, the Gartner Group predicts that by the end of 1999, NT Server will have made its way into 95 percent of large enterprise networks — defined by Microsoft as networks with more than 1,000 desktop PCs attached. But NT Server hardly ever stands alone in an enterprise network, says Neil MacDonald, a senior research analyst at Gartner.

"One of the biggest challenges in IT to-

Gartner Group predicts that by the end of 1999, NT will have made its way into 95 percent of large enterprise networks.

day is making NT [Server] work peacefully in your environment," says MacDonald.

For smaller companies, NT integration is not much of an issue, since the tendency is to use one operating system throughout. In fact, due to historical questions of scalability and manageability, NT Server traditionally has held its strongest market position in small companies where there are fewer than 150 users, says Daniel Kusnetzky, program director for client and server environments at Framingham, Massachusetts-based International Data Corp.

"It is less painful for smaller shops to standardize on NT Server than it is to use either Netware or Unix and deal with the hurdles to get them to work together," he says.

But for those large companies that need to go the mixed-environment route, deploying NT Server with existing systems is not something that happens quickly — nor cheaply. Before embarking on this task,

take some practical advice from users who have gone before you. Know what you want from NT. Understand exactly where it will — and won't — mesh with what you've already got. And don't go it alone.

WHAT'S IT GOOD FOR?

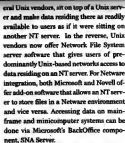
While Microsoft would have you believe that NT is an all-purpose operating system, you have to narrow down what exactly you want NT to do for you. Experienced users say NT works well as a database, messaging, and Web platform. But for large-scale network operating system deployment or mission-critical applications requiring a stable, scalable operating system, they say you should look elsewhere.

"It's not an all-or-nothing game at this point," says Kathy Cruz, chief information officer at Aspect Telecommunications, a computer-telephony integration firm based in San Jose, California. "You have the luxury of putting [NT] where it works and sticking with something else where it doesn't. We are lucky enough to be able to buy an application based on what it does for us rather than what [operating system] it runs on." NT Server first made its way into Aspect's network two years ago when the company swapped out Lotus' cc:Mail for Microsoft's Exchange. From there, it made sense for Cruz to replace the company's Netware file and print servers with NT Server to cut in half the number of servers she maintains.

MAKING IT WORK

Once you've decided where NT Server best fits into your organization, you need to think of integrating it into your network on several levels, including giving users access to data stored on disparate hosts, maintaining multiple underlying security architectures, and performing cross-platform systems management.

For simple file-level access across NT and Unix servers, you will need to deploy software that makes one server impersonate the other. Products like Advanced Server for Unix, which AT&T supplies to sev-



eral Unix vendors, an on top of a Unix server and make data residing there as readily available to users as if it were sitting on another NT server. In the reverse, Unix vendors now offer Network File System server software that gives users of predominantly Unix-based networks access to data residing on an NT server. For Network integration, both Microsoft and Novell offer add-on software that allows an NT server to store files in a Network environment and vice versa. Accessing data on mainframe and minicomputer systems can be done via Microsoft's BackOffice component, SNA Server.

Andrew Dooker said emerging NT Server technologies — like Active Server Pages — help him provide even more accessible connections to Turner's host systems. An ActiveX control sitting on the SNA Server machines in Atlanta allows end users in Turner's sales' London, Paris, and Tokyo offices to establish terminal sessions inside their browsers over the Web.

But while data access in a mixed environment seems to be under control, managing NT's underlying network architecture with Unix- or Network-based ones is a major obstacle to full NT integration. This is because NT Server's access rights are defined by network resource groupings called domains, which, when layered on top of user access rights already in place for Network or Unix, become redundant and costly.

For Lynn Hovsekhachian, senior vice president of Chase Manhattan's distributed

computing services division, the trick is getting a network of 400 NT servers to run parallel to the company's 700-server Network file and print network. Because of the complexity of NT domains, Chase chose to administer the two environments separately. Although Microsoft intends to remedy its domain problems with a full-blown directory service in NT 5.0 sometime next year, Chase Manhattan can't wait that long. Yanny Hocht, vice president in charge of architecture within Chase Manhattan's distributed computing services group, says that by year's end the company will move to centralized administration using Novell's Directory Services for NT.

Cross-platform systems management is another area that these experienced NT users label a concern. This task may be getting easier — within the last year, system management platforms like IBM's Tivoli, Computer Associates' Unicenter, and HP's OpenView have gained NT support. But if you run a mixed Unix and NT network and haven't invested heavily in one of these expensive management platforms, your op-

tions are limited. To get unified server management tools across NationsBanc's HP-UX and NT boxes, Shope had to build his own by porting a homegrown set of Unix management tools to NT. For mixed Network and NT environments, users can turn to Novell's ManageWise desktop and server management software or to third-party products like Intel's LANDesk or Compaq's Insight Manage.

YOU NEED HELP

With the proliferation of NT in corporate America, experienced NT professionals willing to work in-house are at a premium. Chase Manhattan had to raise its salary bar significantly to attract — and keep — people who can work with both the Novell and the NT systems. Aspect's Cruz offers a tuition reimbursement program for employees pursuing Microsoft certification. "But even then, you're only guaranteed that person knows NT. It's very rare to find someone who has a real deep understanding of multiple [operating systems]," says Cruz, who payroll separates NT and Unix staffs.

By 2000, when Gartner estimates the market for NT services will exceed \$10 billion annually, "getting outside help will be a way of life for anyone looking to put NT Server into the mix," says MacDonald. ☐

CHRISTINE BERRY IS A SENIOR EDITOR AT NETWORK WORLD.

NT TRAINING

Developing NT Expertise

Companies take varying paths to acquire NT know-how **By Leslie Goff**

NONE OF THE MEMBERS of the networking staff at the American Cyanamid Agricultural Research Center are Windows NT-certified. They haven't attended any formal training, nor have they sought the guidance of consultants. Instead, when networking manager Kim Takayama's staff plunged into migrating a 1,000-user DTC Pathworks environment to NT five years ago, they grew their own expertise.

With 10 to 15 years of systems experience each, the staff members found that NT's ease of use and their own understanding of basic systems principles were enough, says Takayama.

"We tried a little training here and there to see what we liked, and we found that with the group of people we have here, we prefer doing it on our own," Takayama says.

Takayama's staff is an exception to the rule: Most organizations looking to build internal expertise in Microsoft's Windows NT are turning to external consulting, mentoring, and training to help bring NT know-how in-house and keep it there. Larger companies tend to favor long-term consulting arrangements, supplemented by intensive classroom training. Smaller firms usually go a more economical route, working with one consultant for a few days and then getting more information from the Internet, books, or maybe the local community college.

Mentoring ensures a bigger bang for your NT buck. However, those who have experienced it say you shouldn't just bring in outside help to advise you on NT configuration and performance. It's better to have specialists work side by side with permanent team members to explain what is being done and why.



"My background has taught me that mentoring — having someone watch you do the work and correct you — is better than a class, which is not real-world," says Christopher Smith, a certified Microsoft professional, certified Novell engineer, and network manager at Innova, a manufacturer of wireless telecommunications equipment in Seattle. A seven-day consulting and mentoring arrangement site up about 20 percent of Innova's \$350,000 consulting and training budget, Smith said.

At publisher Lippincott Williams & Wilkins, the support of a technology-savvy CEO opened up the training cash flow. Because management understood the business drivers for moving from four different operating systems to NT, vice president and chief information officer Marion Mullauer was empowered to do whatever it took to acquire the expertise Lippincott needed.

She hired two new team members who are "NT-convertant," brought in consultants to make recommendations, established mentoring relationships, and is sending 10 staff members through the full cycle of NT Server and

NT Workstation training. Mullauer won't reveal the dollar amount she has spent on NT training and consulting, but says it accounts for 15 percent of her IT budget.

Organizations that lack Lippincott's resources have sought more economical paths to developing internal NT expertise. A small credit union in Columbus, Ohio, for example, is skimping on NT expenses so it can allocate the majority of its \$30,000 IT training budget for 1996 to conferences and seminars on disaster recovery, electronic commerce, and Internet technologies.

"For what we are doing, we could find a better use for the \$2,000 an NT class would cost. That's the thing that's

Many companies choose mentoring, pairing staff with experienced NT consultants.

so nice about NT — it's all pretty basic and self-explanatory, really," says Steve Sims, information technology manager at Tellico Credit Union.

Still, in August the company paid between \$300 and \$400 to bring in a consultant for a day to evaluate system setup and optimization, and to teach Sims' two Unix administrators how to create new user accounts, change passwords, and perform other administrative basics.

"Now that we have NT up and running, we want someone to come in and make sure our [is] are dotted and i's are crossed," Sims said. ♦

LESLIE GOFF IS A FREQUENT CONTRIBUTOR TO COMPUTERWORLD.

The State of NT Security

Is Windows NT secure enough to protect your data? By Peter Ruber

WHEN IT COMES to security, Windows NT reviews are mixed. Some praise NT for having good security underpinnings, citing a consistent interface with which administrators can control access and manage users. But others question the value of deploying Microsoft's Windows NT for business-critical enterprise applications and especially for Internet commerce.

For every praiseworthy security feature, there seems to be a dark side. "NT is unbelievably complex to secure," says Sidney Felt, an analyst with Standish Group International, in Dennis, Massachusetts, "because Microsoft hasn't clearly documented all its security procedures." He claims that a side effect of NT's code being so large and immature is that it's riddled with holes and bugs, making it a tempting target for hacker attacks.

As it frequently does for its operating systems, Microsoft has responded with patches and "hot fixes" for many well-publicized problems. That's disconcerting for network managers and chief information officers expecting robust software out of the box, say critics, adding that Microsoft should deliver better-tested products instead of relying on customers to find the problems. "Microsoft is spending too much time cleaning up after the horse has left the barn," complains Jim Hurley, industry analyst for the Aberdeen Group, in Cambridge, Massachusetts.

INTERNET VULNERABILITY

Even more disconcerting is NT's vulnerability over the Internet. Problems with authentication and application-level security plague Microsoft's

Internet Information Server (IIS), say critics. To secure NT Server, administrators have to turn off network broadcasting services (the services that let devices communicate with each other), which could hobnobize the system if administrators go too far, says John McCown, technical director of networks for the International Computer Security Association (ISCA), in Carlisle, Pennsylvania.

H. Morrow Long, Yale University information security officer, believes it is possible to make NT secure with relative ease. "If you keep your wits about you, you can build a secure NT network," he says. "If you're running NETBIOS over TCP/IP, where each machine is broadcasting information about itself, there are ways of turning these off on an Internet-accessible server. But a lot of administrators don't know how to do that."

As a security precaution, Long recommends migrating all users and servers to NT 4.0, turning off all Microsoft services in the NT Web server

and never connecting a Web server to an internal NT domain. "There shouldn't be any file sharing or file mounting between the two," he recommends. For better security, access to back-end systems should be handled only through SQLNET or other database protocols. Finally, he strongly advises installing Microsoft's Windows NT Service Packs and all hot fixes posted on Microsoft's security Web site since then and getting on the Computer Emergency Response Team (CERT) and NTBUGTRAQ mailing lists.

Will NT 4.0 be more secure? No one's betting their bankroll. Some users and analysts fear NT 5.0's larger code base will open even more black holes, touching off another round of endless hot fixes and further delaying its chances for enterprise deployment. Microsoft's challenge is to successfully integrate stronger security features into the heart of NT 5.0. *

PETER RUBER IS A FREQUENT CONTRIBUTOR TO CIO.





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Michelin site links dealers

CONTINUED FROM PAGE A2

386 dealers — 90% of the 318 the company initially targeted — are using the system so far, said Lynn Melvin, manager of electronic-commerce application development at Michelin.

All told, Michelin has spent more than \$5 million on its Bib Net since May 1995, when the project team commenced planning, Melvin said. Some savings have been realized in printing materials, reduced order errors and, to a small degree, customer service. But the Bib Net site, which went live two years ago, hasn't paid for itself yet.

IT ISN'T ABOUT MONEY

"We didn't really go into this to save money," Melvin said. "Basically, we wanted to create close partnerships [with customers]."

Less technologically inclined customers have made a point to let Michelin know that they don't want to see the customer service phone lines go away.

But Erica Rugulies, an analyst at Giga Information Group in Cambridge, Mass., said the site was a good competitive investment for Michelin, given that probably all the tire dealers will have Internet access some day.

She said companies have reduced the cost of processing an order from the \$8-to-\$45 range to the 3 cents-to-\$1 range.

"With Web-based customer service of all sorts, companies should not expect to break even in the first year," Rugulies said. "The second year, some may break even. The third year, they may see 10% to 40% savings in customer service costs."

The tire dealers also benefit. Leo Zannetti, director of purchasing at Belle Tire Inc., a chain headquartered in Allen Park, Mich., said the reduction in order errors alone is worth it. His company is also using a more extensive tire inventory management system that Michelin installed on his PC.

To develop the Bib Net site, Michelin put together a cross-functional team from its marketing, sales, customer service and information technology departments. The team also enlisted their independent tire dealers, visiting 55 of them and bringing 15 to 20 to South Carolina to brainstorm a technical wish list and help design the user interfaces.

"They gave us carte blanche to draw

up what we wanted," Zannetti said. "They did a great job taking in our input. Most companies would say, 'Here's what we have.' I guess corporate America's changing every day."

Michelin employed Signal Internet

Technologies Inc. to help build the system.

On the back end, the companies did integration work with the core main-frame system. Although Michelin now uses IBM's DB2 6000, it plans to switch to Oracle Corp. databases in the future to handle bigger files, Melvin noted.

Some of the 386 Bib Net users aren't crazy about paying for the WorldCom phone connection, Melvin said. But

Michelin may try to address that issue by letting customers use the public Internet. A study is planned during the coming year. □

MORE ONLINE

For resources related to customer service, visit [Computerworld online](http://Computerworld.com/online).

www.computerworld.com/news

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Briefs

E-mail market share

In the next few years, what will be your corporate messaging product of choice?

Microsoft Exchange	35%
Lotus Notes	23%
Internet Mail	19%
Lotus CCMail	11%
HP OpenMail	6%
Novell GroupWise	2%
Microsoft Mail	2%
Other	2%

Base: 148 Fortune 500 organizations surveyed
Source: Forrester Research Inc., San Francisco

How Pro E-mail

GTE Internetdirecting, a division of GTE Corp., has announced a free Web-based E-mail service. GTE Web Mail can be accessed in a personal Web browser or through a dedicated E-mail client or webmail. Customers can sign up for this service at a GTE Web site (www.gte.com/webmail).

View your fax

A Dayton, Ohio-based messaging contractor has launched a service that lets users view their fax messages on the Internet. The service, called FaxView, allows users to view their fax messages through a Web browser, where they are scanned for large. If a virus is detected, the message is quarantined and the recipient notified. Customers can be notified by e-mail. Faxing information isn't available.

and No. 2

Sun Microsystems Inc. has announced it has topped three messaging software from Sun Microsystems Inc. in Cupertino, Calif., for use with its Sun Internet Mail Server. The Internet Mail Server is a Web-based messaging system that allows users to view their fax messages through a Web browser, where they are scanned for large. If a virus is detected, the message is quarantined and the recipient notified. Customers can be notified by e-mail. Faxing information isn't available.

Broker prepares network for worst

► If disaster strikes, it will be wheeled off-site

By Cynthia Bourne

WHAT'S YOUR disaster-recovery plan when it comes to your network? For ProEnergy Energy Marketing LLC, which goes by the name ProEnergy, the answer is a network on wheels.

In the event that a hurricane forces ProEnergy to flee its facility, the company can literally roll its 100-node network out the door to a location off site, where it can be up and running in a matter of hours, said Gary Gannon, information technology

director at ProEnergy, a broker of natural gas in Houston and a subsidiary of Cinergy Corp. in Cincinnati.

Fortunately, ProEnergy hasn't had to move the network because of a disaster. But to make sure the process on wheels.

DISASTER RECOVERY

works, Gannon's team disassembled the network and moved it to another floor in their building. The process took four hours.

During a real move, the racks and computer systems would be loaded onto a 15-ft. truck headed

Network, page 48



How ProEnergy can roll its network to safety

ProEnergy's disaster-recovery plan is both novel and simple. Here's how it works:

The network was designed with six metal racks that house servers, hubs and routers. Snap-on modular jacks are bolted onto the backs of the racks. Wiring from the wall plugs in to the outside of the jacks, while wiring from the network devices plugs in to the inside of the snap-on panels.

During a move, the wall plugs are unhooked from the

outside of the panels and left behind. (An extra 3,000 yards of cabling is coiled along.) The racks are rolled down a ramp from the networking room and out the door. Hardwood panels are placed over carpeted areas so the racks can be moved smoothly.

"The design is like an extension cord," said Gary Gannon, ProEnergy's IT director. "You leave the original wiring in place, and when you come back you just plug it back in,

assuming you have something to come back to," Gannon added. Upon return, the wires are reattached. The network uses the Dynamic Host Configuration Protocol to dynamically assign clients their IP addresses, so administrators don't have to manually reestablish each client's address.

In addition, 30 workstations and 30 laptops are moved. The biggest hassle, Gannon said, is moving the PCs one by one. But for now, he said, that's the company's only method.

— Cynthia Bourne

• Road warriors

Callers want 'free' back in toll-free

By Matt Hamblen

IT'S ONE or life's little ironies: You make a slew of toll-free calls from your hotel room to check E-mail or conduct conference calls, thinking you've escaped hotel telephone charges.

Yet when you check your bill, you find the hotel has charged you 75 cents or more for each toll-free call, or a 10-cents-per-minute rate after the first 30 minutes are free.

Such charges for toll-free calls surprised some recent visitors to Comdex/Fall '98 in Las Vegas and to the Communications Managers Association (CMA) annual meeting in New York, even though some U.S.-based hotel chains have been imposing them for months. And hotels abroad have done so for years.

"I think it's a good thing to complain about," said Richard Healey, treasurer of the CMA and president of Rockefeller Group Telecommunications Service Inc. in New York. "Even though it's a dollar here and

Callers, page 50

NT upgrade may force users to add power

By Sharon Gaudin

ONE ANALYST is warning corporate users planning to upgrade to Microsoft Corp.'s Windows 2000 that they'll have to upgrade more than the operating system and the machine it runs on.

Most will have to rebuild their NT domains, add bandwidth, convert networks completely to TCP/IP and upgrade desktop machines, according to Wayne Kernochan, senior vice president of platforms at Aberdeen Group Inc. in Boston.

He said it will take users six to 12 months to complete a Windows 2000 rollout on both desktop and server. Despite the pain involved, many users will move anyway, he said.

"They'll go with NT 5.0. They won't forgo," Kernochan said. "Whether you want to eat your spinach at the beginning of the meal or later on, it's still going to taste bad."

The primary features in Windows 2000, previously known as Windows NT 5.0, are the Active Directory, which was designed to centrally manage net-



Alden Buick Pontiac GMC's Paul Soares isn't sweating the infrastructure changes needed for Windows 2000

work information and devices, and the Kerberos security system, which is fundamentally different from the security

Win 2000, page 48

Novell takes modular route

► Goal: Let users buy only needed components

By Roberto Fiasco

NOVELL INC. recently announced two upcoming applications designed to let customers roll out Microsoft Corp.'s Outlook mail client and Office 2000 while using GroupWise at their messaging backbone.

The two applications represent a new modular upgrade policy for GroupWise. Novell officials said. Rather than issuing periodic upgrades to the whole product suite, Novell plans more frequent releases of components that will add features without requiring a major upgrade. The first two, which will become part of GroupWise 5.5, are code-named Curacao and Magellan. Both are scheduled for release in the second quarter of next year. Pricing information wasn't available.

Curacao will let users link the Outlook mail client to the GroupWise backbone, allowing GroupWise customers to use the Microsoft mail client without replacing their messaging infrastructure.

Magellan is a Web publishing application based on a Web Publisher document management feature that lets users publish GroupWise documents to the Web. Magellan can use and create GroupWise-like document libraries on a Web server with some security and document management capabilities but doesn't require a GroupWise client. It was designed to give users of Office 2000 and other desktop suites GroupWise document management functions, Novell officials said.

Analysts said the goal is to let users buy the packaged mail, calendaring and scheduling components they need—pieces that will work with the Novell tools they already have.

GroupWise user Steve Lopez, network manager at the National Board of Medical Examiners in Philadelphia, said being able to add functions on to GroupWise rather than upgrade to a new release would allow him to gain functionality more quickly. The organization is considering using Outlook as its mail client but still running GroupWise on NetWare on the back end. Lopez said GroupWise application programming interfaces have been too complex to make this happen in the past.

Tim Skane, a senior analyst at Boston-based Aberdeen Group Inc., called Novell's new product road map for GroupWise a good one. "We haven't seen details about packaging and pricing yet," Skane said. "But [Novell] sounds much more responsive to market realities than they have in the past."

Currently, GroupWise ranks third in messaging seats sold, behind Lotus Development Corp.'s Notes and Microsoft Corp.'s Exchange server and Outlook client (see chart).

In the past, Novell's major

GroupWise releases have usually been supplemented by service packs and point upgrades. But the service packs were mostly bug fixes that added no real value to the product, said Ron Nicholson, a messaging manager at Georgetown University in Washington.

It's difficult to explain to upper managers why the mail system had to come down for an upgrade when the improvements aren't visible to end users, he said. Georgetown has about 20,000 users in its directory.

Joyce Graff, a senior analyst at Gartner Group Inc. in Stam-

Total messaging software seats for first half of 1998

Notes	21.9M
Exchange	15M
GroupWise	12.4M
Netcape	
SuiteSpot ICE	5.2M

Source: International Data Corp., Framingham, Mass.

ford, Conn., said Novell and Lotus are taking their cue from newer products, such as Netscape Communications Corp.'s Communicator, which are built in a modular way. "They're easier to update, and everything doesn't have to get overhauled," Graff said. □

Win 2000 upgrade an undertaking

CONTINUED FROM PAGE 47

scheme in NT 4.0. Windows 2000 is expected to debut in about a year. Kernochan's specific recommendations for upgraders include the following:

•To use Microsoft's Active Directory, users should change their domain system from many small domains to fewer large domains because Active Directory runs better on a few large files.

•Get the Zero Administration for Windows application programming interface on each desktop, which means upgrading all DOS and Windows 3.5 machines to 32-bit software.

•To have security on the desktop, each desktop must be a Windows 2000 workstation because the security system needs to make access and touch each PC.

•All packaged applications being used will have to be upgraded to Windows 2000-compliant applications.

Jonathan Perera, Microsoft's lead product manager for Windows 2000, said he's recommending that customers start

with pilot projects until they complete any year 2000 work, then deploy Windows 2000 incrementally.

"If you want to deploy Active Directory 100% across the board, right out of the gate, that person does need to think about



their infrastructure," Perera said. He added that users can set it up right out of the box without making any infrastructure changes—but that means they won't get the benefits of the new features. Perera also recommends 148M bytes of memory on servers and 64M bytes on desktops.

Some users aren't too worried about those kind of infrastruc-

ture changes. "We're upgrading our servers from 133 [MHz] Pentiums to 200 [MHz] Pentiums, taking a look at bandwidth," said Paul Soares, general manager and senior vice president at Alden Buick Pontiac GMC in Fairhaven, Mass.

"The GAC Access Council will handle that for the 8,500 dealerships... and when you're talking about 8,500 processors, that adds up. It will be a big job getting ready," Soares said upgrading the servers will start in a few weeks.

"I think most of the infrastructure changes they're talking about are things you're going to be wanting anyway," said the assistant vice president of a large U.S. bank. "It just so happens that you should be TCP/IP-enabled [and] that you need lots of bandwidth anyway. I don't see how it could be less expensive to support a user with a grossly underpowered machine than to pay a few thousand dollars to put something better on their desk." □

NEW PRODUCTS

NETOPIA INC. has announced the Netopia R3000-1 DSL Router, a digital subscriber line router for small-to-midsize businesses. According to the Alameda, Calif., company, the router provides shared, simultaneous connections over copper telephone lines at 64K bit/sec, 128K bit/sec, or 144K bit/sec. It incorporates firewall security and Simple Network

Management Protocol. Configurations scale from 4 to 64 users. Pricing starts at \$95.

Netopia
(510) 854-5000
www.netopia.com

D-LINK SYSTEMS INC. has announced the DES-3224, an Ethernet/Fast Ethernet switch for workgroup environments. According to the Irvine,

Calif., company, the 24-port switch can connect 10M bit/sec and 100M bit/sec segments into any available port. Autonegotiation automatically identifies and determines the correct transmission speed and duplex mode of attached devices. The switch costs \$1,995.

D-Link Systems
(949) 768-0855
www.dlink.com

Network

CONTINUED FROM PAGE 47

for Texas A&M University, three hours away. ProEnergy would set up shop at the university's 150-acre research and engineering site. The site is a low concrete building that contains phone connections and a power supply as the company's five IT staffers (and 100 employees who would also go to the site) can continue to work. Internet access would be done via dial-up modems. ProEnergy would pay telephone connection charges and a fee to use the facility, but Gannoo didn't say how much.

Ideally, the move would be made at night to avoid disrupting business processes—one minute of network downtime during peak trading hours can cost the company millions in lost revenue. But Mother Nature doesn't always cooperate. If flooded roads force ProEnergy to stay in Houston, for example, the network could be moved to a lower floor to avoid high winds.

Analysts said one downside of the mobile network is the tediousness involved in moving it.

Yet the success of the plan rests on the fact that the ProEnergy staff can move the network extremely quickly and reliably, said Michael Speyer, an analyst at The Yankee Group in Boston.

"The mobile network is a smart idea," said James Taylor, a consultant at OnSource Consulting Inc. in Houston. But, he said, ProEnergy also needs a solid recovery plan in case of a fire.

Gannoo said a fire would shut ProEnergy down for about four days. Though without a solid plan, Gannoo is confident that he could replace damaged equipment within 48 hours.

WHY NO REDUNDANCY?

Some companies, for their disaster plans, set up redundant networks. Gannoo said that approach isn't cost-efficient because he would have to maintain two or more of everything. And because ProEnergy uses shared platforms such as Intel Corp. hardware, which has short life cycles, it would cost more to upgrade two networks.

Given those facts, the model is one that could be a cost-effective way for a small company such as ProEnergy to handle disaster recovery, said Craig Johnson, a consultant at the FITA Group in Portland, Ore. □

Netscape

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Callers want 'toll-free' back

CONTINUED FROM PAGE A7

there, it adds up to big bucks."

Experts said the practice isn't illegal. Though companies with "800" and other toll-free numbers pay for the cost of the call themselves, hotels are free to add any surcharges they want.

Say a road warrior dials in to his company's server by a toll-free number to check E-mail. The toll-free service might cost the company 10 cents per minute, then the hotel might also charge the guest 10 cents per minute.

"I seriously doubt companies are bud- getting for much 800 [hotel] charges, and it could be millions for a large com- pany," Healey said.

Several hotel chains in the U.S. started adding the fees in June, after the Federal Communications Commission allowed local phone companies to charge 25 cents for a toll-free call on a pay phone, analysts said.

But the trend has escalated in recent

How to lower toll-free-number hotel charges

- 1 Have your corporate travel department negotiate for no toll-free-number charges before making a reservation
- 2 Urge convention organizers to lobby against the fees for the convention
- 3 Use dial-around software to find local access to the inter- net, although most hotels also charge for local access
- 4 Complain when you check in and when you check out and ask for a reduction of half or more

months, they added.

"Hotels are just looking at the charge as a source of revenue, and they're getting greedy," said Les Spielman, a consultant for hotel telecommunications projects at Hospitality Automation Consultants Ltd. in North Hollywood, Calif.

But Jeanne Datz, a spokeswoman for Hilton Hotels Corp. in Beverly Hills, Calif., said the fee was designed to help hotels pay for their networks "because business travelers are using laptops and staying online for exorbitant amounts of time."

A fee helps en- courage shorter periods of usage and frees up lines for other guests to use, she said. "Our tele- com infrastruc- ture is being greatly im- pacted," she said. "There's a trend among hotels to do this because we're all in the same boat."

But Spielman said he counsels hotels to keep toll-free calls free and charge more for direct-dial calls, be- cause customers might not make a re- turn visit if they get billed with too many toll-free charges.

"The more people complain, the more hotels will think the charges are wrong," Spielman said. □

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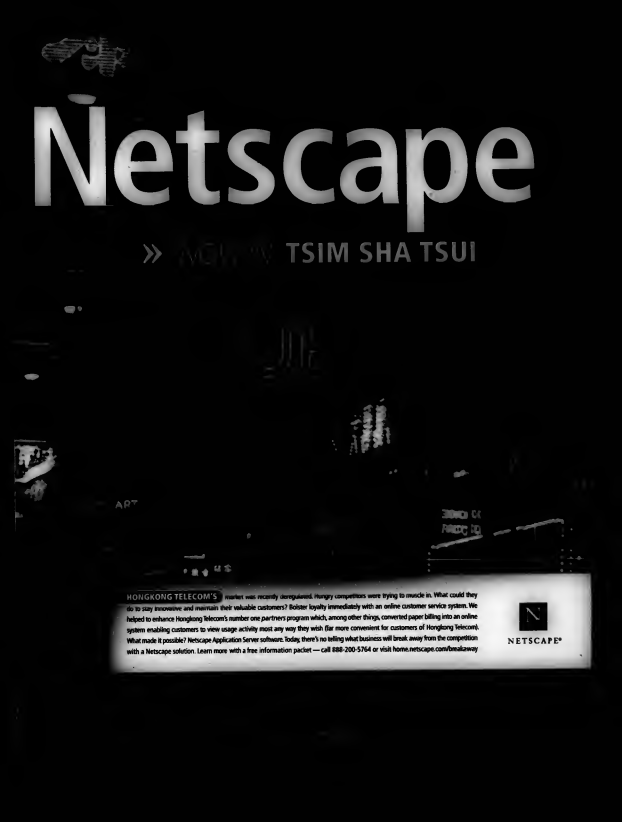
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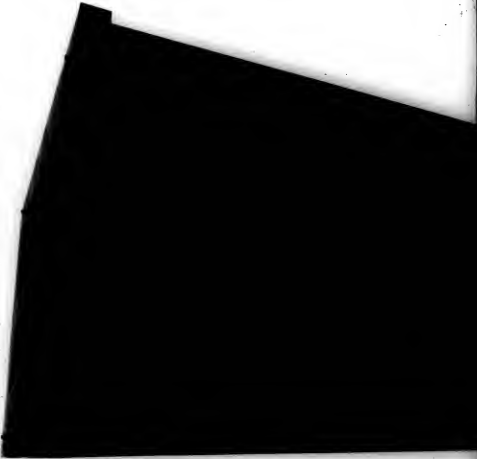
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Software

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Briefs

Full center alliance

To bolster its full center offerings, National Electronic Commerce in World Data, Inc., will begin offering Santa Clara, Calif.-based Edify Corp.'s Electronic Warehouse self-service customer support software for blank, phone- and Internet-based automated systems. National Electronic Commerce helps call centers manage customer interaction.

Database certification

Microsoft Corp. has announced a new certification for database administrators. As part of the Microsoft Certified Database Administrator certification, candidates must pass four core exams that focus on the company's SQL Server 7.0 database system and one elective exam.

Web video commerce

Sun Microsystems, Calif.-based Microsoft Inc. plans to integrate its Premier Web-based learning software with RealNetworks Inc.'s RealSystem Go streaming video system in the first half of next year. The integration will let Premier users now experience that includes streaming video on RealSystem Go.

Retail data analysis

Pilot Software Inc. in Cambridge, Mass., will add two retail-oriented data analysis systems to its suite of online analytical processing products next month.

THE BIG PICTURE

Projected worldwide enterprise application revenue



*Projected

(Includes enterprise resource planning, supply-chain management, plant maintenance and manufacturing shop-floor operations)

Source: Gartner Research Inc., Boston

Data warehouses make ERP whole

► Help consolidate data from multiple sources

By Craig Stedman

FOR SOME manufacturers piecing together global enterprise resource planning (ERP) systems, a data warehouse is turning out to be the glue that holds everything together.

Take AlliedSignal Inc.'s diesel-engine turbocharger division, for example. The \$1 billion unit uses data warehousing software to make sure business managers get consistent information from what will eventually be four SAP AG R/3 transaction systems running in different parts of the world.

AlliedSignal is being forced

to split SAP's ERP applications across regional databases because of time-zone differences, language constraints and localized functional needs that ruled out those of a common transaction server.

"But we can't consolidate any of that [information] unless we have something to pull it into," said Jeff Smith, worldwide vice president of information technology at AlliedSignal Turbocharging Systems in Torrance, Calif.

Mixing the different data streams and creating reports for users within R/3 would have required heavy-duty coding in

block in the development of a warehouse: integration among disparate tools. The suites integrate the tools primarily by sharing meta data, a directory of facts about data and other elements in a warehouse.

The suites include products that can come from multiple vendors and that are necessary to build a data warehouse: extraction/cleansing tools, a database, and query, reporting and online analytical processing (OLAP) tools.

In addition to aiding actual development through the sharing of meta data, the suites simplify the process of negotiating pricing with multiple vendors, and they provide a single point

Warehouse, page 58

A cure for warehouse headaches?

By Linda Wilson

FOR CORPORATE information technology departments, the time and complexity involved in building a data warehouse and an associated decision-support environment is a major headache. Vendors are starting to respond by offering integrated warehousing suites.

These suites are intended to address one major stumbling

Three data mart choices

Among the packaged data marts available today are the following:

■ IBM: Visual Warehouse uses IBM's DB2 Universal Database. The transformation tool is ETExtract from Evolutionary Technologies Inc. The front end is Business Objects from Business Objects Inc. IBM has relationships with other vendors as well.

■ Informix Corp.: Decision Premier uses Informix's Dynamic Server as its database. It also uses Informix's DataBridge for transformation. MetaCube ROLAP, an Informix product, is its front-end tool.

■ Sybase Inc.: Warehouse Studio uses Sybase's IQ database. The transformation tool is called Powerstage, a rebranding of Ardent Software Inc.'s Data Stage.

CHOOSE YOUR WEAPON

What kind of technology do you plan to use to warehouse and analyze your ERP data?

Stand-alone data warehouse	61%
Report writers built in to ERP software	56%
Third-party query tools tied to ERP system	31%
ERP vendor's data warehousing software	27%

Base: 77 IT managers and business users surveyed in July; multiple responses allowed; percentages have been rounded to the nearest whole number.

Source: The Data Warehousing Institute, Eastborough, Wis.

SAP's notoriously complex Advanced Business Application Programming development language, Smith said.

Instead, AlliedSignal is relying on a series of packaged data marts and intranet-based R/3 analysis applications developed

by Influence Software Inc. in Sunnyvale, Calif.

The warehousing software is being used to analyze costs and profits at various plants, Smith said. He added that it's also finding a role in some day-to-

ERP, page 58



JVC sales reps laud automation software

By Thomas Hoffman

JVC COMPANY OF AMERICA is arming its sales representatives with tools that are helping them make the most of the holiday shopping season amid turbulent conditions in the consumer electronics market.

The homegrown sales automation system allows JVC salespeople to download fresh sales and inventory information onto their laptops in the amount of time it takes them to drink their coffee each morning. That lets them march out and visit retail customers such as Circuit City Stores Inc. prepared to field any request thrown at them.

"When I walk into a customer's store, I can find out what [equipment] has shipped, what I can't shipped, why it hasn't shipped and when it's going to," said Richard Benbow, a regional sales manager who covers five Carolinas for JVC

from his home in Raleigh, N.C.

"I don't have to crawl under a desk, hook into a phone line and dial in to a mainframe to find out [about an order]," Benbow said. "It's helping me meet my [sales] quotas because nothing falls through the cracks."

JVC has been using Pompano Beach, Fla.-based TopSpeed Corp.'s Clarion application development tools for the past 10 years to build applications to track prices, shipments and profits-of-the-day. But it wasn't until 1993 that JVC began using the Clarion tools to develop applications for salespeople to download daily, weekly and monthly reports on purchase order status, inventory and their own sales updates.

The 30-screen system lets salespeople check on their own sales, quotas and back orders, but not those of other salespeople.

JVC, page 58

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JVC reps

CONTINUED FROM PAGE 55

Previously, JVC would send thick weekly sales reports overnight to salespeople who worked out of their homes. But the information often was too outdated to help them meet quotas or help answer customer questions.

"The information I need from JVC can't be a day old but not a week old," said Carl Russo, a 35-year JVC sales veteran in Houston who has lived through the transition at JVC. "I can't think of anything I need now."

Over the past few years, JVC has closed satellite offices in Dallas, Atlanta and other locations, arranging for placing because most of its 300-plus salespeople work out of their homes. Now JVC salespeople download the information as ASCII text files by dialing in to Windows NT servers and accessing SQL Server databases.

That change helped the company substantially reduce its equipment costs by slashing the number of network connectors and dumb terminals it once used, said Daniel Carrasco, microcomputer development manager at JVC in Atlanta.

"It was very economical" to provide sales data to users remotely, Carrasco said. Annual support costs are in the low five digits, including a few Dell Computer Corp. PowerEdge 2100 servers that cost \$7,000 each, Windows NT server licenses and two to three yearly Clarion software upgrades that have cost between \$300 and \$849 each, Carrasco said.

Looking ahead, JVC plans to upgrade all of its offices and salespeople on the same release of the sales software by early next year, Carrasco said. Carrasco and JVC salespeople said it's difficult to quantify the impact that the sales automation tools have had on the company's revenue stream. But just being able to download sales re-

ports rather than send them via overnight delivery has cut JVC's Federal Express costs in half, Carrasco said.

More important, it's helping JVC salespeople react to customer needs faster in a market where some consumer-electronics retailers are feeling the heat. Tandy Corp. for example, saw its third-quarter sales drop 8%. Circuit City, meanwhile, contin-

ues to ride strong same-store sales growth as consumers "are buying up anything that's digital" this holiday season, including TVs and other consumer products, said Kenneth Glasman, an analyst at Davenport & Co. in Richmond, Va.

Still, "VCRs aren't like toothpaste — you don't need to buy them every month," Carrasco said.

JVC, a closely held unit of Victor Company of Japan, doesn't break out its earnings or revenue.

MORE ONLINE

For more information on sales force automation, visit computerworld.com/news.

www.computerworld.com/news

The software helps

JVC salespeople react to customer needs faster.

ERP

CONTINUED FROM PAGE 55

day operations that cut across regional boundaries, such as closing the monthly books and moving parts between plants.

Using a connecting layer such as a data warehouse to tie together far-flung ERP systems is a pragmatic alternative to the frequently impossible dream of running a global company on one big transaction system, said David Caruso, an analyst at AMR Research Inc. in Boston.

And many companies installing ERP software have data warehouses in their plant, ac-

cording to a recent survey by The Data Warehousing Institute (see chart, page 55).

The business process and data commonality that an ERP data warehousing combination brings can be an effective one-two punch for executives trying to integrate their businesses, said Wayne Eckerson, an analyst at the Institute in Gathersburg, Md. The two technologies "really are flip sides of the same coin," he said.

Meritor Heavy Vehicle Systems LLC, a maker of truck components in Troy, Mich., is another company that plans to turn to data warehousing for consolidating information as its ERP installation expands be-

yond Europe to systems in the U.S., Asia and Brazil.

"As soon as we start [the U.S. deployment], we have to start building that bridge," said Monte Nickolls, vice president of IT at Meritor.

The domestic rollout of Oracle Corp.'s ERP applications is due to begin next June and should be completed in late 2000, and Meritor expects to develop a working data warehouse in the same time frame.

The data warehouse will be used both for business analysis and as a "global data registry" that logs internal transactions such as parts shipments among plants in different regions, Nickolls said. □

Warehouse

CONTINUED FROM PAGE 55

of contact — at least initially — to resolve technical glitches.

No matter which product you choose, "the real advantage is you know these tools have been demonstrated to work together," said Robert Craig, an analyst at Hurwitz Group Inc. in Framingham, Mass.

Blue Cross/Blue Shield of Rhode Island considers that a big advantage, said George Trudel, a consultant in the Providence insurer's business and technology office. Blue Cross' industry business built an IBM DB2-based warehouse on a mainframe several years ago. Now, the insurer wants information from its rapidly growing health maintenance organization (HMO), Blue Chip of Rhode Island, added to the database.

The problem: The HMO's transaction system runs on a Hewlett-Packard Co. HP 3000 server. Several multidimensional data marts, which collect information from the transaction system, are in Esbase, an IBM package from Hyperion Solutions Corp. in Sunnyvale, Calif.

To integrate these systems, Blue Cross is looking to IBM for help. Trudel said. IBM's DB2 OLAP Server integrates

with Esbase via shared application programming interfaces. IBM's Visual Warehouse, a set of management tools for DB2, integrates with several popular data-analysis and -extraction tools from other vendors via shared meta data.

"This is a concern because not only do we want to be able to get at meta data, but we also want users to be able to use it," Trudel said.

New York's Office of Real Property Services in Albany is also interested in integrated offerings. A state agency that ensures the equity of real estate taxes in New York, Real Property Services recently chose Emeryville, Calif.-based Sybase Inc.'s Warehouse Studio to build a Web-accessible repository of real estate sales in the state.

The goal is to release the application via the Web to local tax

assessors and the public in January, said Mary Goldblatt, the office's manager of land information systems.

Though the office was already using some Warehouse Studio components, implementing the full package hasn't been simple, Goldblatt said. For example, the agency had to hire Sybase's consultants to help it get a proof-of-concept project completed.

The agency's experience illus-

trates that, even with these products, building a warehouse application isn't easy, said Kevin Strange, an analyst at Gartner Group Inc. in Stamford, Conn. The products are "loosely integrated," he said, involving the sharing of meta data across products rather than using a single, integrated repository. □

Wilson is a freelance writer in McHenry, Ill.

NEW PRODUCTS

DRAGON SYSTEMS INC. has announced Dragon NaturallyOrganized, \$999 speech-recognition software designed to enhance worker productivity.

The Newton, Mass., company said the software converts speech into actions such as E-mail generation and appointment scheduling. Naturally Organized supports Symantec Corp.'s Act database and includes a mobile digital recording device that captures "to do" items while on the road. The software costs \$999.

Dragon Systems
(617) 965-3000
www.dragonsys.com

COMMERCEPATH INC. has announced CommercePath 2.0, a Windows NT-based fax server designed for high-volume fax communication.

According to the Portland, Ore., company, the software has a browser-based in-

terface and provides simultaneous fax services to mainframe, midrange and LAN applications, as well as electronic data interchange translators and E-mail. It's built on a Microsoft Corp. SQL database.

Pricing starts at \$15,000.
CommercePath
(800) 600-4399
www.commercepath.com

STERLING SOFTWARE INC. has announced SAMS/Vtape, software that creates "virtual" MVS-based tape volumes that appear as physical volumes to a mainframe.

The Rancho Cordova, Calif., company said the software works with existing disk and tape storage hardware and lets tape volumes be written to a disk buffer instead of directly to tape. It allows tape volumes residing on disk to be served at disk speed and to be stacked before output to tape. Stacking improves cartridge

utilization. Pricing begins at \$24,000.

Sterling Software
(916) 465-8500
www.sterling.com

AVANTGO INC. has announced AvantGo 2.0, client/server software that links enterprise applications to handhelds.

According to the San Mateo, Calif., company, the Windows NT server component enables TCP/IP-based transactions between a company Intranet or database and handheld computers such as Palm Corp.'s Palm Pilot. Using a browser, administrator can manage user access privileges and data synchronization tasks, as well as remotely add or remove applications from mobile devices.

AvantGo costs \$30,000 for 100 users.
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Servers & PCs

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Briefs

Disruptable links

Several networking vendors have recently focused on the "wired-wireless" enterprise systems capable of both static and migrating local and remote links. For example, Teknor America Inc. in New York has the Portage point-to-point, with a 100-MHz Intel Corp. Pentium III processor and with bytes of memory, for \$1,000.

The mini-sized, Super Jetter Jette 4000 from Super Jetter Corp. in Elizabeth, N.J., features an 11-inch multi-touch display and light bytes of memory.

Teknor America Corp. in New York, N.Y., features an 11-inch multi-touch display and light bytes of memory. The Jette 4000 is designed to allow the user to view and control the data in the U.S. early next year, starting at about \$1,000. Super Jetter Corp. in Elizabeth, N.J., features an 11-inch multi-touch display and light bytes of memory.

More monitors

Targeting customers who need to view and analyze large amounts of complex data in a limited desktop computing space, Hewlett-Packard Co. has announced a multi-display technology for its dual-monitors-capable HP DesignJet 200 workstations.

This visualization environment is targeted at professionals in financial, engineering, graphic arts, computer-aided design and engineering, network administration, software development and geographic information systems.

The DesignJet 200, which is targeted to ship next month, supports up to four monitors with a integrated graphics board. It uses 32-bit and includes a graphics board with 16 MB of memory and a 640x480 resolution. It also has a 16-bit color display.

For more information, contact Hewlett-Packard at 800-451-4242.

PCI-X ups the ante on buses

► 133-MHz, 64-bit path would best competition

By April Jacobs

WITH PROCESSOR SPEED INCREASES coming faster and faster and applications eating more horsepower, users may benefit from a new bus design, dubbed PCI-X.

PCI-X is a proposed new version of the Peripheral Interconnect Bus used on PCs to link add-on cards and auxiliary onboard circuitry such as video and SCSI to the PC's processor and memory.

It would run at 133 MHz and have a data path 64 bits wide, vs. standard PCI's 33-MHz speed and 32-bit bus width.

A new 66-MHz version of the standard PCI is expected to be used in servers next year from companies such as Com-

pq Computer Corp. There's also a rarely implemented PCI with a 64-bit-wide bus. Today, Intel Corp.'s Advanced Graphics Port variant of PCI, used for newer video cards, runs at 66 MHz.

PCI-X would

outpace them all. "I must definitely think we would be interested in this," said Dave Geivert, senior technology officer at Sioux Falls, S.D.-based First Premier Bank. "We are big proponents of PCI, and one of our biggest challenges is monitoring and managing bottlenecks."

— Dave Geivert
First Premier Bank

biggest challenges is monitoring and managing bottlenecks."

The bottom line, Geivert said, is that more powerful processors are putting increasing pressure on buses.

"How much of that pounding can a [PCI] bus take?" he asked.

"[IO is the next battle on the] bottleneck front," said Eric Dickstein, lead technical analyst at Continental Grain Co. in New York.

He noted that buses and processors traditionally go back and forth as the source of bottlenecks as their speeds increase in response to each other.

The PCI-X proposal is under consideration by a working PCI-X, page 62

The new PCI-X standard would:

► Up the existing PCI bus speed of 33 MHz to 133 MHz

► Offer backward compatibility for PCI users

► Be an open specification for development, once formalized

Hitachi, Sun offer midrange storage

► Fibre Channel systems cost \$35K to \$279K, support NT

By Nancy Dillon

IN RESPONSE to user demands, two leading storage vendors are plugging the midrange-centric holes in their subsystem product lines.

Hitachi Data Systems in Santa Clara, Calif., today will announce a new storage subsystem aimed at open-system server clusters. And Sun Microsystems Inc. recently announced NT support for its StorEdge 4500 array.

The new Hitachi subsystem, called the Freedom 5000, is a midrange array that is positioned between Hitachi's entry-level 5700E array for departmental servers and the enterprise 7500E array for

mixed mainframe and open-system attachment.

The 5000 offers four Fibre Channel connections or eight SCSI connections, and each rack-mount or cabinet system houses 32 18C-byte drives. Supported platforms include Windows NT, Novell Inc.'s NetWare and seven flavors of Unix.

"[The 5000] has the same multibus architecture as the

7700E, so it runs like a scolded dog," said Ronald Johnson, an analyst at Evaluator Group Inc. in Englewood, Colo.

"But one thing that's missing is support for the latest 9C-byte drives. ... And it's only for [open-system] servers that don't require coexistence with MVS."

Johnson said the 5000 will go "head-to-head" with the Symmetrix 3000 open-systems line from EMC Corp. in Hopkinton, Mass., although EMC offers a Storage, page 62

REVIEW ► LapLink Professional 7.5

More power, efficiency in dial-up software package

PRODUCT REVIEW

► LapLink Professional 7.5

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Pros: Efficient file transfer and effective remote control in an easy-to-use interface

Cons: Less expensive features than its competitors

Summary: LapLink Professional lets you efficiently link two PCs with a variety of connection technologies

By Russell Kay

TWO USERS who need quick, efficient remote access to files on their desktop machines or enterprise computers will appreciate Traveling Software Inc.'s newest release, LapLink Professional 7.5. Its easy-to-use, well-designed interface simplifies secure remote access and file transfer.

I've used earlier versions of LapLink to help set up a succession of laptops and desktop computers, but never before have I exercised its recently expanded capabilities for remote control or tested it over a telephone link. This version offers extra power, new connection possibilities, print redirection and efficient management of

LapLink 7.5, page 63

NT RAID PURCHASING

NT server storage is moving from internal to external purchases

	Have purchased in past 12 months	Will purchase in next 12 months
Internal storage to one server	83%	78%
External storage to one server	43%	46%
External storage to multiple servers	10%	26%

Source: Survey of 287 worldwide NT Server users

Source: Progress, Inc. and JMI

Servers & PCs

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Briefs

Ultraportable blimp

Several notebook makers have recently jumped on the trend toward ultrathin notebooks, systems about 1 inch thick and weighing less than 3 pounds. For example, Toshiba America Inc. in New York has the Portege 3010C, with a 366-MHz Intel Corp. Pentium MMX processor and 32MB of memory, for \$1,999.

The same-speed, \$2,299 Action Argo UltraLite from Sharp Electronics Corp. in Mahwah, N.J., features an 11.3-inch active-matrix display and 64MB of memory.

Turkmen International Corp. in Houston, Texas, plans to ship its new Power Slim line of notebooks in the U.S. early next year, starting at about \$1,500. Umax Technologies Inc. in Fremont, Calif., has announced the ActionBook 333T, expected to ship next month at prices starting at \$1,999. It uses a 333-MHz Advanced Micro Devices Inc. K5-6 processor and has 32MB of memory.

More monitors!

Targeting customers who need to view and analyze large amounts of complex data in a limited desktop computing space, Hewlett-Packard Co. has announced a multiple-display technology for its dual-processor-capable HP Kayak XA-S workstations.

This visualization environment is targeted at professionals in financial trading, graphic arts, computer-aided design and engineering, network administration, software development and geographic information systems.

The Kayak XA-S, which is expected to ship next month, supports up to four monitors with a single-slot graphics board. It costs \$5,295 and includes a 450-MHz Pentium III processor, 128MB of memory and a 9.1-Gbyte Ultra SCSI hard drive in a desktop case.

Configurations using the Pentium II Xeon processor will also be available.

PCI-X ups the ante on buses

► 133-MHz, 64-bit path would best competition

By April Jacobs

WITH PROCESSOR SPEED INCREASES coming faster and faster and applications eating more horsepower, users may benefit from a new bus design, dubbed PCI-X.

PCI-X is a proposed new version of the Peripheral Interconnect Bus used on PCs to link add-on cards and auxiliary onboard circuitry such as video and SCSI to the PC's processor and memory.

It would run at 133 MHz and have a data path 64 bits wide, vs. standard PCI's 33-MHz speed and 32-bit bus width. A new 66-MHz version of the standard PCI-X is expected to be used in servers next year from companies such as Com-

puting Computer Corp. There's also a rarely implemented PCI with a 64-bit-wide bus. Today, Intel Corp.'s Advanced Graphics Port variant of PCI, used for newer video cards, runs at 66 MHz.

"We are big proponents of PCI, and one of our biggest challenges is monitoring and managing bottlenecks."

**— Dave Geiver
First Premier Bank**

PCI-X would outpace them all. "I most definitely think we would be interested to this," said Dave Geiver, senior technology officer at Sioux Falls, S.D.-based First Premier Bank. "We are big proponents of PCI, and one of our biggest challenges is monitoring and managing bottlenecks."

At the bottom line, Geiver said, is that more powerful processors are putting increasing pressure on buses. "How much of that pounding can a [PCI] bus take?" he asked.

"I/O is the next battle on the bottleneck front," said Eric Dinstein, lead technical analyst at Continental Grain Co. in New York.

He noted that buses and processors traditionally go back and forth as the source of bottlenecks as their speeds increase in response to each other.

The PCI-X proposal is under consideration by a working group, PCI-X, page 62

The new PCI-X standard would:

- **Use the existing PCI bus speed of 33 MHz to 133 MHz**
- **Offer backward compatibility for PCI users**
- **Be an open specification for development, once formalized**

Hitachi, Sun offer midrange storage

► Fibre Channel systems cost \$35K to \$279K, support NT

By Nancy Dillon

IN RESPONSE to user demands, two leading storage vendors are plugging the midrange-centric holes in their subsystem product lines.

Hitachi Data Systems in Santa Clara, Calif., today will announce a new storage subsystem aimed at open-systems server clusters. And Sun Microsystems Inc. recently announced NT support for its StorEdge A5000 array.

The new Hitachi subsystem, called the Freedom 3800, is a midrange array that is positioned between Hitachi's entry-level 3700E array for departmental servers and the enterprise 7700E array for

mixed mainframe and open-system attachment.

The 3800 offers four Fibre Channel connections or eight SCSI connections, and each rack-mount or cabinet system houses 32 186-byte drives. Supported platforms include Windows NT, Novell Inc.'s NetWare and seven flavors of Unix.

"The 3800 has the same multibus architecture as the

7700E, so it runs like a scaled dog," said Ronald Johnson, an analyst at Evaluator Group Inc. in Englewood, Colo. "But one thing that's missing is support for the latest 96-byte drives. . . . And it's only for [open-systems] servers that don't require coexistence with MVS." Johnson said the 3800 will go "head-to-head" with the Symmetrix 3000 open-systems line from EMC Corp. in Hopkinton, Mass., although EMC offers a Storage, page 62

REVIEW ► LapLink Professional 7.5

More power, efficiency in dial-up software package

PRODUCT REVIEW

► **LapLink
Professional 7.5**

**TRAVELING
SOFTWARE INC.**
Bethell, Wash.
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www.travelsoft.com

Price: \$149

Pros: Efficient file transfer and effective remote control in an easy-to-use interface

Cons: Less expansive features than its competitors

Summary: LapLink Professional lets you efficiently link two PCs with a variety of connection technologies

By Russell Kay

AND USERS who need quick, efficient remote access to files on their desktop machines or enterprise computers will appreciate Traveling Software Inc.'s newest release, LapLink Professional 7.5. Its easy-to-use, well-designed interface simplifies secure remote access and file transfers.

I've used earlier versions of LapLink to help set up a succession of laptops and desktop computers, but never before have I exercised its recently expanded capabilities for remote control or tested it over a telephone link. This version offers extra power, new connection possibilities, print redirection and efficient management of

LapLink 7.5, page 63



NT RAID PURCHASING

NT server storage is moving from internal to external purchases

	Have purchased in past 12 months	Will purchase in next 12 months
Internal storage to one server	83%	76%
External storage to one server	43%	46%
External storage to multiple servers	10%	26%

Source: Survey of 237 worldwide NT Server sites

Source: Surveyed, Jan. 1998

Storage

CONTINUED FROM PAGE A1

better software package. Pricing for the \$800 ranges from \$45,000 to \$140,000; an entry-level Symmetrix 3000's list price starts at \$110,000.

"We have a plan stating that it's important to us to centralize [open-systems] server management in 1999," said Gerald Deats, manager of information processing support at BankAmerica Corp. (formerly called NationsBank) in Charlotte, N.C.

"We have a plan stating that it's important to us to centralize [open-systems] server management in 1999."

**- Gerald Deats
BankAmerica**

He said he's interested in the \$800 because although his group is happy with its mainframe-attached 7700iF, the group is "always cost-sensitive."

A5000 array users who are sensitive to growing NT data stores should be able to breathe a bit easier thanks to the recent Sun announcement.

The new NT support for the fully

Fibre Channel system — which uses Fibre Channel drives and Fibre Channel connection interfaces — means users can buy new A5000 arrays tailored to NT or turn existing Solaris-only A5000s into NT-only arrays via an upgrade.

The A5000 scales from 45G bytes to 900G bytes and ranges in price from \$35,000 to \$279,400.

"We like the A5000 for its fibre speed," said Dietmar Erwin, operating

system manager at Forschungszentrum Juelich, a national research laboratory in Juelich, Germany.

HIGH HOPES

Erwin has no fear shielded away from NT 4.0, but he said the new NT support is important to him because he has high hopes for Windows 2000 (formerly called NT 5.0).

"NT 5.0 has the promise of central

management," Erwin said. "And if we are able to migrate some of our 400 Unix systems to it, we'll gain so many more off-the-shelf, commodity software components."

Sun previously supported Windows NT only on its SCSI-based StorEdge A3000 midrange array and its high-end StorEdge A7000 array for mixed mainframe and open-systems attachment. □

PCI-X ups ante

CONTINUED FROM PAGE A1

group formed by the PCI Special Interest Group in Hillsboro, Ore., an independent standards body with a membership of more than 800 software and hardware vendors.

The PCI-X specification proposal was introduced in September by a trio of hardware vendors: Compaq, Hewlett-Packard Co. and IBM. The working group also is expected to include Intel — which makes most PC motherboards and many of the support chips — and Dell Computer Corp. in Round Rock, Texas. The group is about to begin the formal review of PCI-X.

Initially silent on the PCI-X proposal, Intel said Nov. 19 that it's working with the standards group but has some technical issues with the proposed standard. Intel has proposed its own new bus standard, which at 2.5 GHz would be much faster than PCI-X.

Intel's Next Generation I/O is based on a serial bus, not a parallel bus such as PCI-X, and an Intel spokesman said the use of a serial bus eliminates the possibility of contention for bandwidth.

Products based on PCI-X are expected to be delivered next year, while those based on Intel's proposal wouldn't be ready until 2000. Servers and high-end workstations will likely use the new bus technologies first. □



LapLink 7.5

CONTINUED FROM PAGE 41

display characteristics to speed up operation.

LapLink is very handy for the occasional user, and the standard installation configures it for maximum help. Whenever you choose a menu or tool-bar op-

tion, a pop-up help window describes your options in step-by-step detail. After the first few uses, these helpers become annoying as they simultaneously grab focus and cover up the buttons you want to use. Fortunately, you can turn off these "quick step" helpers.

LapLink has always supported direct cable connections (serial or parallel) for fastest data transfer, but this version adds Universal Serial Bus (USB) sup-

port. USB transfers are reportedly five to seven times faster than parallel or serial connections, but since the required special \$39.99 USB cable wasn't available at press time, I couldn't verify those claims. The program ships with a serial cable. In addition to the various cable, modem and network connections, LapLink also supports IrDA/Fast IR infrared links and Integrated Services Digital Network.

Installation was easy, as we've come to

expect with modern Windows applications: It took just a few minutes, 8M bytes of disk space and a single reboot. The only vaguely technical chore was changing the modern properties to allow auto-answer.

Savvy users and network administrators will appreciate the fact that the default installation sets up strict security options, which you can change afterward. You can allow public access or a specified list of users (with password-protected log-ins), and you can establish optional or required callback to specified or restricted phone numbers. You also can have LapLink encrypt all data.

POINT OF VIEW

To get a better perspective on LapLink, I also installed and used Symantec Corp.'s PCAnywhere 3.0. I found that for most uses, the two packages are very similar overall. They both offer most of the same capabilities: file transfer, remote control as either host or guest, remote printing, a chat window and extensive security, including callbacks and encryption. Both support Windows 3.1, 95, 98 and NT 4.0. Both packages support the synchronization of files and directories between PCs.

But there are distinct differences. PCAnywhere lets you start a call with a voice connection, then switch over to data transfer. It also allows connection to multiple computers (provided they're on a TCP/IP network) in a form of conferencing via IP multicast. LapLink does none of that, but it does have a convenient address book that automates much of the connection process for the user.

To use either package for remote control or file transfer, you have to leave the program running on the PC you're going to dial up. But PCAnywhere requires you to take the additional step of designating that machine as a host. With LapLink, there's no fuss: Just start up the program and it figures out the rest for itself. □

Key reviews: PC hardware and software in Worcester, Mass. You can reach him at rusnell@ix.com.

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NEW PRODUCT

NEOWARE SYSTEMS INC. has announced the Neostation 220-M, a multimedia-enabled Windows terminal.

According to the King of Prussia, Pa., company, the thin-client terminal includes support for Citrix Systems Inc.'s intelligent console architecture audio so users can access multimedia applications, including RealAudio, over the Internet. The system was designed to operate with Citrix's MetaFrame software and Microsoft Corp.'s Windows NT Terminal Server Edition. The system costs \$539.

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Managing

Dana Mead's NEW MISSION

TENNECO'S CEO REVEALS HIS IT
STRATEGY FOR HELPING THE ONCE-
MIGHTY CONGLOMERATE SHAPE UP



Dana Mead's NEW MISSION

CONTINUED FROM PAGE A7

CW: You've set very aggressive targets: reduce \$5.2 billion in debt, double revenue and triple growth by 2001. What role will IT play? Will it be used to cut costs? To expand markets?

MEAD: All of the above. To hit those goals, we have to do it both with organic growth internally and by acquisition.

One of the first areas we've been looking at when we do due diligence on these acquisitions is IT.

For instance, you look at a [automotive] aftermarket company. If its systems aren't pretty modern, pretty efficient, you're looking at a big bill downstream.

except for [three] systems in specialty packaging where we've done some fairly extensive modifications. One is Customer-Linked Manufacturing: market-driven manufacturing and scheduling. We think it will enable a huge reduction of inventory and getting the supply chain shrunk down.

In automotive, we have two similar systems called Impact and Target. They're modified for various differences from [the] Packaging [division] in markets and manufacturing. Those are both going to be fully installed by the middle of next year. And we've done the other in the paperboard packaging business and headquarters.

tion taking care of [year 2000] for us in Europe. It's just going to be a juggling act. We have to be skillful enough to keep [the juggling act] from having a major problem. We're relying on our business and financial IT people to do that.

Yak has served as a wake-up for many boards. It has prompted them to look quite thoroughly and more deeply into IT. We actually present to our board [at] every board meeting where we are on Yak, for example.

JUSTIFYING IT SPENDING

CW: How is IT helping cost-cutting?

MEAD: One example with huge potential is Customer-Linked Manufacturing. It can save on manufacturing costs dramatically because it can reschedule setup times and such much better, based on what the market is pulling out of the plant, rather than the plant pushing the product into the market.

We opened an information technology operation center in Chicago about a year ago, which also covers our telecommunications and has the big worldwide help desk. That was the culmination of a plan to take it of these computer centers and consolidate into one. The savings were quite significant. Now our goal is to take out about 20% of [the new center's] first-year costs.

CW: Are you that tough justifying all IT projects?

MEAD: Projects we know will improve productivity, customer service, financial control or management of assets are going to get a huge amount of scrutiny.

Every time I have a business review or an operations review, I ask, "How much are you saving right now because of [this system]? What is the projection next year?" I have to make sure those numbers actually show up somewhere on the bottom of the profit-and-loss statement.

One of my favorite comments about IT projects is that they're always on time and always under budget — until they begin. I was talking to somebody... about [an] estimate on an IT project. It was only a 10% overrun. I said, "You ought to be happy, because usually we're 40% to 50%." It's a really difficult thing to do. And the heavier demands on systems, the more diffi-

cult it is to predict what they're going to cost and how difficult they'll be to install.

CW: You headed the National Association of Manufacturers. How would you characterize CEO feelings about IT spending?

MEAD: The IT function is going through kind of a perceptual transition. At one time it was just a bunch of nuts-and-bolts guys sitting there, highly technical. [Many executives thought], "Just come and fix this thing" or "Just get it put in, and don't bother me anymore." Now, CEOs and senior managers are beginning to realize that a good information officer can serve as a pretty useful adviser.

LEARNING FROM THE MILITARY

CW: How does your military background color how you think about IT?

MEAD: A huge amount of the end result of any military operation depends on the proper and timely use of information, or intelligence.

CW: What can the military teach there?

MEAD: Information and intelligence don't come easily. You do patrolling raids, technical [intelligence] acquisition with radar, satellites. It takes a lot of hard work, a lot of management attention, a fair amount of money. And probably most important, it takes very good people, even at the board level.

CW: You do a lot of speaking about the U.S. leading the global information economy. What's the biggest threat?

MEAD: If you look at a big U.S. plant, the middle 60% of workers can be trained to deal with basic IT requirements.... The next 20% can be trained for relatively sophisticated computer and control processes and systems. The bottom 20% cannot learn computer functions. So only a part of your manufacturing workforce can deal with the knowledge economy.

You're not going to be able to pay very much for those jobs. We need a safety net. Unless we find a way of dealing... with this group, we're inviting a lot of social and political unrest.

I'm not saying we're going to have people in the streets or anything. But it can create some serious problems. I think it's something we have to deal with. □

THE YEAR 2000 PROBLEM "HAS PROMPTED [BOARDS OF DIRECTORS] TO LOOK QUITE THOROUGHLY AND MORE DEEPLY INTO IT."

CW: On the flip side, has IT in businesses you've spun off been an asset or a liability? Has anybody said that they're too expensive?

MEAD: No. In areas where we've invested a fair amount in technology we've insisted — and I think successfully — that we get paid for the capability that we built or installed. We've found that... people buying these companies are paying more attention, too.

CW: What's the strategy for making your own companies ready for sale in the area of IT?

MEAD: We don't do anything in design or hardware that would prevent us from pulling this company out as a stand-alone company and capturing the majority of the capabilities that we install. Our systems are modular.

ENTERPRISE RESOURCE PLANNING

CW: What's your goal with ERP?

MEAD: The main motivation is full integration between the marketing, sales, the logistical distribution operations, the manufacturing operations and the suppliers.

CW: And how is it going?

MEAD: In the U.S., we're rolled out,

In Europe, we're probably two-thirds through. We haven't... installed in places like China and India.

CW: How big a motivator was the year 2000 problem?

MEAD: We didn't start out in 1998-99 saying, "We're putting in SAP because of Yak."

YEAR 2000 AND THE EURO

CW: At this stage, how concerned are you with millennium problems?

MEAD: We are basically an industrial supplier to car companies or a consumer supplier to large distributors or chains, so we don't think there's going to be much of a problem. The big supplier distributors have already addressed most of this.

But we're being realistic. We know there are going to be some glitches and some problems. But we don't think there will be anything that's going to be particularly difficult.

Europe is a little more of a concern. Not because the Europeans aren't very sensitive. But their plate is so loaded up. We're in 15 countries in Central Europe, 21 of which are going to be on the euro.

We're counting on the SAP installa-



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COMPUTERWORLD

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SOURCES: FOR IT MANAGERS

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JARGON JUDGE

Doggone bad choice of words

Ask most people what "best of breed" means, and they'll probably ask you what dog, cat or horse show you're talking about.

Unless, of course, you work in technology. In which case, it's understood that you mean "application."

But you both might not actually be thinking the same kind of application, which, as you know, is the danger of jargon in the first place.

I'd planned for months to write this column and was called to action by lots of recent—and unsolicited—mail advocating that I do so. I sharpened my pencil and whipped out my dictionary of acerbic words, ready to let best of breed have it.

Then I realized there wasn't a lot of agreement on what it meant.

Most readers and colleagues thought best of breed meant, simply, the best. Like Lassie might win best of breed for collies at a dog show, so Software A might be considered the best-of-breed word processor or spreadsheet or mail package.

Now the problem with that (besides the fact that it's not what the term means to many people) is that it leaves the confusers of "best" unidentified. Best according to whom—the marketplace? Legend or conventional wisdom? Or, God forbid, the vendor? It also doesn't tell you best for... what?

And the problem with that is it defeats the purpose of the "other" definition of best of breed.

That original term referred to software a company chose from various vendors to best meet its needs, rather than settle for a single-vendor package that might not. So the best mail program was the one that had the functions your company wanted and nicely served your number of users. Data for the word processor, the scheduler, the human resources package, the utilities, the tools. The result: You had the best of every breed.

Confusing the original best of breed with its truncated contemporary cousin won't kill anybody, but using the term could cause some workplace confusion.

So say "best" for what and according to whom. Or explain that your system represents what someone considered was the best of all worlds, with pieces culled from the vendor landscape.

Whatever you do, don't say best of breed. Based on the mail I've received, it's likely you'll offend dog lovers and nonlovers alike.

Does any high-tech jargon leave you steamed? Or smiling? Tell Anne McCrory, former Computerworld copy desk chief and now assistant sections editor. Her E-mail address is anne_mccrory@cw.com.



ANNE MCCRORY



WEB SITE

CYBERCHEEZE
www.cybercheeze.com/archives/humor/

Need a break? CyberCheeze, sponsored by Yes Interactive AS, is an online collection of humor with a heavy techie presence.

Categories cover general computer-related humor, programming, the Internet and—

for those who like to take on the Gollaths of the world—a site strictly devoted to Microsoft.

For instance, here's an entry from the "Computer" humor page:

YOU KNOW YOU ARE ADDICTED TO THE INTERNET WHEN...

- You find yourself typing "com" after every period when using a word processor.com.
- You turn off your modem and get this awful empty feeling, like you just pulled the plug on a loved one.
- Your wife drapes a blond wig over your monitor to remind you of what she looks like.
- All of your friends have an @ in their name.
- You can't call your mother—she doesn't have a modem.
- Your phone bill comes to your doorstep in a box.

Microsoft's dominance in operating systems represents a new threat to the national security of our information-based society.

PAUL A. STRASSMANN

MICROSOFT: A U.S. SECURITY THREAT



The government is trying hard to contain the expanding power of Microsoft by antitrust litigation that would prove present harm to consumers. That's insufficient. The government also should address the risks from information warfare attacks on a largely homogeneous systems management environment. Inevitably, information and criminals will take advantage of flaws in the gigantic Microsoft operating systems that are on their way to becoming the engines for running most of our information infrastructure.

MICROSOFT'S CREEPING AMBITIONS

Microsoft's controlling position in software packages — the basis on which most computer networks and software applications exist — is best illustrated by the rise of its profits relative to the total profits of all publicly traded software firms. That advantage has widened steadily from 25.7% in 1987 to 55.6% in 1997 and is likely to climb to well over 60% as Microsoft's profit gains keep accelerating. That trend is ominous because a company's profit relative to all its competitors is the best measure of its proliferative power and the competitors' precariousness.

Yet it's the future prospects of a Microsoft-dominated world that worry me most.

Bill Gates' September memorandum to Microsoft managers outlining the directions for his company heightened my apprehensions.

Gates talks about how, in the future, companies will store their data and applications on "mega-servers" controlled by Microsoft software. Companies and users would dial up their Microsoft accounts to obtain the required software and download information they need from servers managed by a Microsoft operating system.

To further those ends, Microsoft assembled a Web Essentials team to

explore what central services could be used daily via a Microsoft portal site. In that way, the megaserver would offer a unifying "single storage engine." Applications would keep information directly in a central store instead of their own files.

Thus, Microsoft now sets its sights not only on the control of local computing, but also on the sources from which all program code and data originate.

(Although I was unable to obtain a copy of the memo, its contents were paraphrased in detail to Computerworld by a Microsoft public relations representative.)

THE DANGERS OF DOMINATION

Upgrading Microsoft software has been a logical choice for customers who wished to keep up with changes in technology. But the risks of an integrated family of operating systems running all U.S. computers — a declared Microsoft objective — make selecting a Microsoft platform more than a purely technical choice. An all-encompassing operating system bares itself to hostile exploitation of paralyzing security flaws. The presence of a fatal defect is unavoidable, as the complexity of Microsoft systems expands to bizarre proportions with each new release. It's the search for such a fault that occupies the minds of some of the brightest computer experts. Finding a crack through which one could induce mayhem with only a few keystrokes would be worth a great deal of money, especially when supporting an act of terrorism.

It's only a question of time before the ubiquitous presence of Microsoft operating systems — supported by a software-updating network — reaches a state of interconnectivity that makes a universal systems crash feasible. All that will be required is inducement of a widespread information infrastructure collapse through a deliberately executed and preplanned

act of information warfare.

No agricultural expert would suggest that only one crop, using the identical seed strain, be planted in Kansas, Ohio, Illinois and Iowa. "Monocultures," as biologists call them, are just too vulnerable to pests, disease and an unprecedented combination of ecological conditions. The Irish potato famine, for example, was caused by reliance on a single strain of potato.

The risk from a software monoculture has increased because of the shift from custom-made software to packaged applications residing on an integrated family of Microsoft operating systems. As a result, the risks from planned subversion of a software monoculture now overwhelm the benefits of Microsoft's operating systems dominance. What's at stake for society is not Microsoft profits but the enormous risk to the economic viability of all computer-dependent enterprises.

The dispute the Department of Justice has with Microsoft shouldn't be judged only by antitrust regulations. It should be influenced by the unprecedented security risks to our information-based civilization. The safety of our society, not just the fortunes of Sun, Apple or Netscape, is at stake. The Microsoft defense that the company was only maximizing profits using common competitive methods is unsupportable. Business practices that may be tolerable for a small competitor are perilous when scaled up to security-threatening proportions on a national scale. □

Strassmann (paul@strassmann.com) lectures on information terrorism at the National Defense University at Fort McNair in Washington. He doesn't believe that more government inspectors can reduce software risks. Instead, purchasers of information technologies should demand independent hacker warnings against systems vulnerabilities.

CIOs TEMPTED BY CONSULTING WORK

Lured by the promise of fatter paychecks, most CIOs polled would consider consulting work if they lost their jobs, a new survey indicates.

RHJ Consulting in Menlo Park, Calif., which provides firms with information technology professionals for projects, based an independent re-

search company to survey companies with at least 100 employees. Of the 1,550 CIOs surveyed, 79% indicated that they would either be "very likely" or "somewhat likely" to become consultants if they got the right offer.

And, according to RHJ, 76% of the respondents said

consultants made more money than CIOs. Fifteen percent said they believe there was no difference in pay.

The survey, conducted in June, has a 3% margin of error. Greg Scleppe, executive director of RHJ, says he can see the allure of IT consulting.

"Project-focused technology consultants who can assist with mission-critical IT initia-

tives... are in unprecedented demand at companies," he says. "Consulting firms enable senior managers to focus on their strengths, such as networking, applications development or IT management, and to leave behind the marketing and other administrative burdens associated with working independently."

—Tom Diederich

f.y.i.

Sometimes the only things we catch are great ideas. Like making Microsoft® SQL Server™ 7.0 work for the enterprise.

Introducing the biggest database ever to run on SQL Server 7.0. More than two terabytes of data mining information, it's the heart of our Customer Behavior and Profitability application. It helps banks know which customers are buying which products. Developed on Unisys enterprise-class servers, it uses our know-how in running big databases to help banks capitalize on the power of SQL Server 7.0 and Windows NT®. Which, in turn, helps them land more of their customers' assets. To find out what data mining on an enterprise scale could mean for your company, stop by our Web site. And catch a free demo. www.unisys.com/SQL7



UNISYS We eat, sleep and drink this stuff.





Review Center

Cool stuff

Oh, what fun!

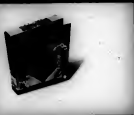


SO, WOULD YOU RATHER BE PLAYING
GAMES OR WRESTLING WITH SQL?

Would you rather be watching a DVD movie on a big plasma display screen, reading a newfangled electronic book or swapping out disk drives? We know that database development tools, Web servers and storage management can be dry, dull — and necessary. But are they fun? Nah. Check out the 40 or so cool gadgets, games and thingamagizmos that we brought into our offices to play with. (Hey, we want to have fun, too!) Some of our favorites: The latest in Global Positioning System technology, a digital video disc player and new displays, an affordable digital camera and the latest games, including this year's hot new title, *Trespasser*.

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Progresses at The City



WE HAVE A LITTLE OF
EVERYTHING and some-
thing for everybody: the
professional in you, the
geek in you and the kid
in you. It's cool stuff...
or... not-so-cool stuff



Oh, what fun!

CONTINUED FROM PAGE 75



Oh, craps! ↑

Slots, tables, actual sounds, Frank, Dean and Sammy — Hoyle Casino has everything for a risk-free Vegas fix. And if you're tired of just playing the slots in real casinos and want to learn how to lose some real money, tutorials on games such as craps and Pai Gow poker will have you betting up to the tables on your next Vegas trip. Hasbro, meanwhile, offers computer board games such as Monopoly, Jeopardy and Scrabble at about \$25 each, and The Learning Co. has Lego Island for \$24.95 and Chessmaster 6000 for \$39.95. — Kevin Burden
 ↑Hoyle Casino by Sierra On-Line Inc. (www.sierra.com)
 \$59.95

¿Que es eso? (what's this?) ↓

Travel alert: Before you take a trip to Madrid or Tokyo, why not tutor yourself with multilanguage software? I checked out two language packages to see just how helpful they were. Berlitz Passport to 31 Languages was far more useful and navigable than IMSI's Easy Language: 25 World Languages. In Passport, you can repeat dictated words and phrases and then be graded on a scale of tourist to native. The packages are for learning at the tourist level.

— Cathy Gagne

↑Berlitz Passport to 31 Languages by The Learning Co. (www.learningco.com)
 \$49.95
 ↑Easy Language: 25 World Languages by IMSI (www.imsiweb.com)
 \$39.95



Click! →

Out of the dozens of digital cameras ranging from \$50 to less than \$1,000, the Olympus D-600L and Kodak's DC210 Plus shape up as this year's hot sellers, according to our informal poll of a half-dozen major camera stores. We also reviewed Canon's Vixia Camcorder, which Canon says has the longest zoom lens of any digital video camcorder — up to eight times zoom maximum. The Olympus was hard to use. The resolution and color were sharp and bright only when set at the highest resolution. The cheaper Kodak's images were bright and clear; the colors were true, and it was a snap to figure out. The digital camcorder also was easy to use.

— Cathy Gagne and Laura Hunt

↑D-600L by Olympus America Inc. (www.olympus.com)
 \$399
 ↑DC210 Plus by Eastman Kodak Co. (www.kodak.com)
 \$399
 ↑Vixia DV Camcorder by Canon USA Inc. (www.canonusa.com)
 \$1,799



← At the tone . . .

Mitsubishi's Mobile Access 100 digital cellular phone doubles as a fax/data modem, letting users send and receive E-mail from laptops and browse intranets or the Internet via Unwired Planet's Browser 2.0. It also includes two-way paging, a data port and Cellular Digital Packet Data radio modem. Microsoft Corp. recently released a \$199.95 900-MHz PC Cordless Phone System, which is a combination voice-activated cordless phone and fully featured phone-mail system (www.microsoft.com). — Joe Magillite and Tom Lameroux
 ↑Mobile Access 100 by Mitsubishi Wireless Communications Inc. (www.mobilaccessphone.com)
 \$99

← Electra-dex

CardScan Executive lets you pop cards into a 6-in.-wide scanner, which then enters that data into an electronic card file. That isn't new, but this is: CardScan Executive places new emphasis on sharing the card data with other applications and gaining access from mobile computers. — James Connolly
 ↑CardScan Executive by Corex Technologies Corp. (www.cardscan.com)
 \$399

Let me ink about it ↑

Rocket Ebook is a great first step into the world of electronic books. It carries the equivalent of 10 novels in a paperback-size, 22-ounce product. But after looking at a computer screen all day, we didn't enjoy reading fiction on the Ebook at night. We also checked out Audible's MobilePlayer. The 3.5-ounce device holds up to two hours of digitized audio that you download from Audible's Web site. The downloads were fast, but the audio was tinny and hollow. — Amy Malley and Paul Gillette
 ↑Rocket Ebook by NovoMedia Inc. (www.novomedia.com); (www.lorengt.com to purchase)
 \$499
 ↑Audible MobilePlayer by Audible Inc. (www.audible.com) \$199

E-mail on the go →

JVC revives the ancient audio coupler for a single-purpose device that lets you get E-mail on the go, with no laptop involved. Forward your mail to PocketMail.com, then retrieve it and send replies using an 800 number. Downloads are fast, but forget long messages or attachments — 4,000 characters (just under two computer screens) is the limit. — Kevin Fogarty
 ↑JVC HC-E100 Portable E-mail Device (for PocketMail) by JVC Company of America (www.jvc.com)
 \$129. Plus a monthly service charge of \$9.95



Talk this way →

Dragon Systems' NaturallySpeaking Mobile wireless speech transcription device looks like a shaver. Unfortunately, it transcribes like one, too. The handheld unit is light, user-friendly and easily plugs into a serial port. But the system got only about half my words right. To be fair, with more training, the system might do better. — Robert L. Scheier

♦NaturallySpeaking Mobile by Dragon Systems Inc. (www.dragonsystems.com) \$249

Pager craze →

The BeepwearPro isn't fashionable, but it's the ultimate accessory for the serious tech-head. The device takes a standard digital wristwatch and builds in a scrolling-text alphanumeric pager and a 150-number phone book. It uses SkyTel's national paging network, which can easily add \$500 per month to the cost. You also can get news and other information beamed to your wrist. — Paul Gillin

♦Beepwear Pro by Timex Inc. and Motorola Inc. (www.beepwear.com) \$159



In the bag ↑

Combiner luggage is now designed to address an individual's needs — how he works, plays and travels. For example, there's a TripleTrek bag that's a combination computer case and gym bag for the fitness nut. Other computer luggage may double as an overnight bag or might be designed for easy access to office supplies or files. At the high end, expect to pay several hundred dollars for air-protected bags or shiny, secure aluminum attache-style cases.

—James Connolly

♦TripleTrek by Kensington Technology Group (www.kensington.com) \$69.99 to \$99.99

← Home suite home

If you have a dream home in the works, a living room that needs rehab or a leaky faucet, your PC can guide the way. Drag and drop windows and furniture on a floor plan, or get a walk-through on home repairs using some of the many home improvement-oriented applications now on the market. I tried IMSI's FloorPlan 3D and Sierra Home's CompleteHome, and I liked what I saw. CompleteHome is easier to use and is aimed at the redecorator/repair person. The IMSI package offers more for homeowners doing a foundation-up design and landscaping. To make the most of the more powerful IMSI program, you need a decent understanding of construction terms and basics.

—James Connolly

♦CompleteHome 2.0 by Sierra Home (www.sierra.com) \$49.95
♦Floor Plan 3D Design Suite by IMSI (www.imsi3d.com) \$49.95

← No lost horizons

Yes, you can get there from here, if you use one of the various Global Positioning System (GPS) and map products that are available. With Street Atlas, you can find and map addresses and area codes. You also can plot travel between two points. It can take a few minutes to get started, but the program has loads of features and even shows which radio stations you can receive along the highways. You also can connect the GPS receiver to your laptop and see exactly where you are along the way. The Magellan GSC 100 Global Communicator goes a step further. It lets you tell someone else exactly where you are, anywhere in the world, by sending them an E-mail.

—Stewart Deck and Tom Lamoureux

♦Street Atlas USA 6.0 (with GPS Receiver) by Delorme (www.delorme.com) \$199.95
♦Magellan GSC 100 Global Communicator by Magellan Corp. (www.magellangps.com) \$999

Oh, what fun! page 79

Would I lie to you? ↑

The Sharper Image calls it a "sculpture," but its purpose is to help you determine whether you're being deceived. The circuitry detects frequency modulations in the human voice caused by stress. Green lights indicate low stress; red lights show high stress, which can translate into "LIE!" The company warns that no lie-detection devices are foolproof, but the TruthSeeker is fun anyway. Use it on your spouse, your kid or your favorite TV newscaster. Sharper Image also offers a TruthQuest phone and a TruthSeeker with a phone jack, if you're feeling Linda Tripp-y. — Laura Hunt

♦TruthSeeker by The Sharper Image (www.sharperimage.com) \$149





**O₂ TURNS MIND NUMBING COMPLEXITY INTO A
COMPETITIVE ADVANTAGE. ISN'T THAT THE OBJECT?**



System

It's really a no-brainer. When your data support needs are too complex for a RDBMS, you need an ODBMS. Something that will simplify your life.

That's where O₂ comes in. O₂ models data directly, without setting limits that complicate your applications. It lets you streamline development of workflow, spatial, PDM and other complex applications. And O₂ eliminates wasted time wrestling with an underpowered database, so you can focus your attention on out-thinking the competition.

Making the complex more manageable is what Ardent, a top 100 software company with a global network of valued partners, does best. For more examples, visit www.ardentsoftware.com or call 1-800-966-9875.

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Ardent
THE ART OF DATA MANAGEMENT

Oh, what fun!

CONTINUED FROM PAGE 17

Divine DVD

Fast-forwarding your VCR to the beginning of a movie is a stab in the dark. But with digital video disc (DVD) players, you got a menu to guide you to where you want to go. Click down once to see the opening credits or click on to your favorite scene (DVDs segment the movies). I hooked up Toshiba's SD3108 DVD to my fairly old color TV and was astounded at the sharpness and brilliance of color. The only drawback: Rentals are hard to come by. DVD players range in price from roughly \$350 to \$1,000. — **Cathy Gagne**
 ♦SD3108 DVD Video Player by Toshiba America Consumer Products Inc. (www.toshiba.com/tacp)
 \$699-95

Scan it all

This handy, dandy scanner is about the size of a Walkman and could be just the thing for anyone who deals with a lot of paper documents. It's a pretty straightforward handheld scanner that a user simply swipes over a document as if lightly ironing. It can capture up to 30 letter-size pages in black and white and then either send them to a handheld computing device (via an infrared port) or to a PC (via cabling). It weighs around 18 ounces. — **Stewart Deck**
 ♦CapScape 910 by Hewlett-Packard Co. (www.hp.com)
 \$699



Secrets of the Stars

If you know Star Wars so well that you recognize U-3PO as an Imperial spy, then Star Wars: Behind the Magic might not be for you. But for the 98% who didn't know, this amazing compact disc is a Star Wars lover's dream. There are tons of trivia, character profiles, behind-the-scenes data, lost scenes and a preview of the 1999 prequel. — **Keith Shaw**
 ♦Star Wars: Behind the Magic by LucasArts Entertainment Co. (www.lucasarts.com)
 \$49-95



Pssst... got \$22,000?

Shiny TVs? Yup. Plasma display technology is hitting the consumer scene. Well, for now, the wealthy consumer scene. Screens range from \$10,000 to \$22,000. The screens are about 4 to 6 in. deep, can hang on your wall and offer screen widths from 40 to 50 in. We reviewed a 42-in. screen from Fujitsu and a 50-in. screen from Pioneer. We were impressed by the sharp resolution and rich colors. But if you're closer than 275, 18 feet, the screen is grainy.

— **Cathy Gagne, Jim Connolly and Kevin Burden**
 ♦Plasmamain 42 by Fujitsu General America Inc. (www.plasmavision.com)
 \$10,999
 ♦PDP-V500X by Pioneer New Media Technologies (www.pioneerusa.com)
 \$22,000

DVDs in the rough

There's something slick about the idea of melding the interactivity of PC applications with a couple of hours' worth of video. A DVD drive and disc look and act like CD-ROM units, except they hold up to 25 times the data. DVD is showing up in a handful of PCs — mine was a Gateway Solo 2100 notebook — and it lets you do neat things like learn how to ski, to cook, to repair your house or to tuck with your system files just to get the darn program to work. Oops, that's the flaw in DVD. The concept is great, but the programs are immature, requiring the type of system tweaking that CD-ROMs needed in their early going. I tried titles such as MAX's Warren Miller's Ski World and the Ultimate DVD Cookbook. The applications look useful, but getting the video to work usually required work. Great potential, but not for the casual user. — **James Connolly**
 ♦DVD titles by Multimedia 2000 Inc. (www.m-21.com)
 \$45 to \$100

Surf 'n' veg

WebTV Plus Special Edition, which comes as a plain black box, is relatively easy to set up (about as difficult as hooking up your cable and VCR to your TV) and has enough features for E-mail, simple searching and surfing popular Web sites. WebTV also includes TV features such as program reminders and local listings. — **Keith Shaw**
 ♦WebTV Plus by WebTV Networks Inc. (www.webtv.com)
 \$199 for box; \$24.95 for monthly service

Ruggedly handsome

At last, a notebook computer for mobile professionals that's handsome and rugged enough that it comes without a carrying bag. Its sleek magnesium alloy cabinet armor this 266-MHz Pentium II against the ravages of the road, and its built-on handle makes it truly portable. Its hard drive is encased in a shock-resistant polymer gel, and I'm told its keyboard can withstand a spill or two — although I don't have the guts to try it.

— **Kevin Burden**
 ♦Toughbook 71 by Panasonic Personal Computer Co. (www.panasonic.com/toughbook)
 \$1,499



Oh, what fun! page 18

Oh, what fun!

CONTINUED FROM PAGE 73



Dead clever →

Playing the role of a dead person is the easy part of Grim Fandango. The hard part is trying to solve a mystery in this 3-D adventure from LucasArts. Based on Mexican, Mayan and Aztec mythology, with some hard-boiled film noir thrown in, this game will have you laughing along with the other corpses as you try to reach "heaven." — *Keith Shaw*

→Grim Fandango by LucasArts Entertainment
(www.lucasarts.com)
\$39.95

Stayin' alive →

Your objective couldn't be more straightforward: Don't get eaten. But when you're surrounded with rogue dinosaurs on the tropical "Site 8" island, in the aftermath of the Last World expedition, staying alive isn't so easy. Everything in the Tresspasser environment reacts according to the laws of physics, which is what makes this game so much fun. The catch for this sophistication is a minimum system of a 566-MHz Pentium II with 64M bytes of RAM or better. — *Kevin Burdick*

→Tresspasser by DreamWorks Interactive
(www.dreamworksgames.com)
\$49.95



← It does not compute . . . to some

A Lego robot? Cool! We asked two brothers, ages 13 and 11, to try it out. They built a pretty neat structure but had trouble programming it because of incompatibilities with their home computers. When we later tried it with our more robust systems at work, we were able to get it going but decided it's more suitable for hobbyists with strong engineering abilities.

— *Initial review by Jeremy and Timothy Weldon*
→Lego Mindstorms Robotics Invention System by Lego Co. (www.legomindstorms.com)
\$200

Hey, batter, batter →

Watch the ball! The little black box on this baseball helmet is supposed to help teach proper hitting mechanics by making the batter keep his head down through a combination of gyroscopes and complex circuitry. Take a proper swing, and the helmet happily plays "Charge" — a bad swing gets a rude buzz. It takes a while to get the hang of it, and its recommendations seem odd at times, but maybe it's just us. — *Stewart Duck*

→Headrite Batting Trainer by Creative Sports Technologies Inc. (www.headrite.com)
\$225



← Atlas-4

Pity the well-thinking parents who paid \$1,500 for a traditional bound encyclopedia just before the fall of the Iron Curtain. Contrast those nearly useless paper volumes with CD-ROM applications that cost less than \$100 and can reflect events that happened less than a year ago. Compared with CD-ROM encyclopedias of a couple of years ago, the 1998-99 versions feature cleaner interfaces and sharper multimedia offerings. A reviewer who worked with the speech-controlled version of World Book found the voice stuff to be frivolous.

— *James Connolly and Cathy Gagne*
→Encarta Reference Suite by Microsoft Corp. (www.microsoft.com)
\$99 (less \$30 rebate)
→1998 WorldBook (Deluxe Speech Edition) by World Book Inc. (www.worldbook.com)
\$69.95 for newly released '99 edition



← Car, Mom?

Just how fast are the kids taking those corners? CarMon (for car monitor) records peak acceleration events for later plotting on a PC. The targeted audience is parents of teen-age drivers and vehicle fleet managers who want to know how their operators are driving. The box is simple to connect to a standard PC serial port, to read out data and to reset for a new trip. Using the monitor to collect acceleration data (including braking and cornering) was easy and seemed to correlate well with known driving habits. — *Doug Johnson, dad of Erin Johnson, 17, shown at left.*

→CarMon by Onguard Technologies Inc. (www.onguardtech.com)
\$89.95

← Ride 'em, cowboy!

Who wants to just play games when you can practically ride them? We tested Logitech's Wingman Force Joystick along with the Intenseor chair from BSG Laboratories. Together, they make a memorable gaming experience. Wrestling a bucking joystick while sitting in a chair rumbling from its integrated speakers — I felt as if my system was trying to throw me. — **Kevin Burden**
 → Wingman Force by Logitech
 (www.logitech.com)
 \$150

→ Intenseor by BSG Laboratories Inc.
 (www.intenseor.com)
 \$627 for chair, chair base and subwoofer, which all can be purchased separately



'Check' it out ↑

Every year, EA Sports builds more realism into its line of sports games. What's particularly cool in NHL 99 is that unique characteristics of individual players have been re-created in the game. For instance, always shoot high on goalie Patrick Roy. Also look for other titles from EA such as Madden 99, Tiger Woods 99 and Triple Play 99. For skiers, Conduit Software offers Front Page Sports Ski Racing for \$14.95. For soccer fans, Fox Sports offers Soccer 99 for \$19.99. — **Kevin Burden**
 → NHL 99 by EA Sports
 (www.easports.com)
 \$49.95

O Pioneers! ↑

You begin your 1448 Oregon Trail journey by picking out a wagon crew at the starting point of Independence, Mo. Next, you decide what supplies to stock up on at the general store, and you're ready to go. I was a little disoriented at the beginning but got the hang of it, though not until after one of my mates had a fatal accident because of my lack of trail experience. This game is loaded with educational tidbits as you head across the Great Plains: history, geography, planning and survival skills. — **Cathy Gagne**
 → Oregon Trail yrl Edition by The Learning Co.
 (www.learningco.com)
 \$39.95

Apple sassy →

I liked the iMac's overall look. Also, it's pretty fast, it plays audio CDs well, it's easy to change preferences, and it's very self-explanatory. A lot of programs and games are already on it, and a lot of things are already set to the most common preferences. The only major problem with it is that it has no floppy drive, which it definitely should have.

— **Katy Johnson, age 13**
 → iMac by Apple Computer Inc.
 (www.apple.com)
 \$1,299

S.W.A.P. (sealed with a picture) →

The QuickCam Home (seen at right on top of the iMac) lets you create movies or still shots, enhance them and attach them to E-mail. It also includes Microsoft Corp.'s NetMeeting for videoconferencing. The picture quality won't stun you, but QuickCam is simple to set up — just plug in the cord to your Universal Serial Bus port and mount the camera on your monitor — and easy to use. Logitech offers several other camera models as well. Other low-end video camera vendors include Connectix Corp., Intel Corp., Zoom Telephonics Inc. and Eastman Kodak Co. Prices start at \$35. — **Jeremy Selwyn**
 → QuickCam Home by Logitech Inc.
 (www.logitech.com)
 \$299.95



✦ You look mahvelous

Fashion Trip allows young women (the company's target market is 15- to 28-year-olds) to design, try on and buy outfits and accessories online. Users are asked to complete a profile that creates a "virtual mannequin" based on a personal profile, body type and style preferences. The software is entertaining, engaging and hip. — **Laura Hunt**
 → Fashion Trip by Sierra On-Line Inc.
 (www.sierra.com/sierrahome/)
 \$39.95

Doggone it →

Want to know what chair your pet favors while you're at work? Bust him with FoneCam, an unorthodox spy eye that remotely takes pictures anywhere a standard phone line is available. The remote digital camera has an integrated 34.4K bit/sec. modem. There's no need for a remote PC or a complicated network connection, just a power source and dial tone. And FoneCam will transmit live still photos to your PC either on command or on a schedule.

— **Kevin Burden**
 → FoneCam by Moonlight Products
 (www.moonlightproducts.com)
 \$39.99



In Depth

STRENGTH IN INDUSTRIAL

It's neither a secret nor a surprise that Linux, the freeware open-source implementation of Unix created by Linus Torvalds, is a popular development and production platform at many Internet service providers, Web-hosting services and software developers.

What may be more interesting is that among the estimated 5 million Linux users worldwide there is a growing roster of mainstream companies. As Daniel P. Dern found when he interviewed three shops running Linux, the reasons information technology managers choose Linux range from pure economics to reliability to access to technical support.

The verdict? With free software, you often get a lot more than you pay for.

London calling

Having worked at Internet service providers and other Internet companies, Zachary Kessin has used various Unix flavors and Red Hat Software Inc.'s Red Hat Linux at work and home for several years. He is a Web engineer in the London office of a major international company. Kessin is also co-head of the Greater London Linux Users Group.

CW: How are you using Linux?

KESSIN: We use a commercial version of Unix for our Web site, but we're using Linux as a workstation operating system.

CW: How has it been in terms of reliability?

KESSIN: As a workstation [operating system], Linux has been more stable than Windows NT. When I was running NT, I was rebooting my machine due to crashes once or twice a day. Running Linux, my desktop box has been up without reboot for 35 days now.



LINUX

IT Careers

COMPUTERWORLD'S
ONLINE **Salary**
SATISFACTIONSURVEY

THE PAY STILL STINKS?

IT managers and staff alike agree that their salaries have increased this year. Some say huge salary expectations are inflated; others say the pay isn't enough to cover the long hours, high stress and tremendous responsibility.

By Alice LaPlante

When Chi Lin began looking for a new information technology position in which he could use his Oracle database administration skills, he was astounded by the low salaries he was offered, given what he'd been reading about weaker demand and salary levels.

Of the 10 companies where Lin interviewed, he got one "outstanding" offer and three he considered respectable. But the rest were "surprisingly lowball," says Lin, who's now very happy with his job as database analyst at the Caesar's World casino in Las Vegas.

"I did some pretty exhaustive research and worked with several head-hunting firms, but most companies were simply not willing" to go as high as he wanted, Lin says.

He says the low offers could have resulted from his lack of the necessary years of experience — despite "two solid years" of Oracle — or his adamant about location, wanting to live and work in Las Vegas.

Or, Lin says, it could be that many companies out there have unrealistic expectations of what it takes to attract a qualified candidate. And though "I did receive the one excellent offer," he says, the experience was "an eye-opener."

Lin isn't alone in his dismay at the realities of the IT job market. The results of Computerworld's First Online Salary Satisfaction Survey are in, and it appears there are certainly a lot of unhappy campers out there.

To get a sense of just how IT professionals really feel about their paychecks, Computerworld posted a salary satisfaction survey on its Web site for approximately six weeks in September and October, and promoted the survey in print and online.

IT professionals came in droves, with more than 1,300 staffers and contractors participating.

And for the first time, Computerworld was able to compare IT professionals' opinions about their salaries, based on the different segments of the industry in which they work.

This included user companies, vendor companies or consultancies and contracting firms. The differences and similarities in how representatives of each segment responded to various compensation issues were enlightening.

Despite, or perhaps because of, the

widespread publicity about the lack of qualified IT workers — combined with the panicked efforts of U.S. employers to fill vacant job slots — a substantial percentage of IT professionals don't feel they are being adequately compensated.

In fairness, some respondents

argued that so much publicity about the lack of high-tech talent and the desperate search for qualified IT help has led to misconceptions about the market itself.

"People really need to consider their own situations, how much experience they have, what kind of certifi-



CW: What about performance?
KESSIN: Linux is faster than Windows NT and more pleasant to use. [It] also multitasks better.

CW: Why "pleasant to use"?

KESSIN: Unlike some of the commercial versions of Unix, such as [Hewlett-Packard Co.'s] Linux includes all the standard utilities [Unix users] expect to be there: GNU stuff, tar, gzip, Perl and various shells.

CW: Does management care that you're using a product that doesn't have a "real" vendor?

KESSIN: On a nonproduction machine, a user workstation, it was OK. They would not have let us use it on a production system. Management wants a vendor they can hold accountable if it doesn't work.

However, this [attitude] may change; after all, when you call [some] vendors for support, you don't always get a response.

CW: How is Linux different?

KESSIN: I can see the source, although that doesn't usually help me. I can usually find an answer on the Web, or on Usenet, or on [an Internet relay chat]. ... Once I even got an answer by E-mail from Linux Tornado himself.

If your Linux supplier [gives you poor support], at the end of your contract, you can go to one of the other companies. There's competition for tech support — it's a major revenue stream.

Linux also seems to require less support than NT or commercial Unixes. It just works. Linux is the server box you set up, stick in the corner and every few weeks make sure the disk drive hasn't filled up. I don't have any concerns using it on production systems.

CW: Does Linux offer corporate users the right balance of stability and evolution?

KESSIN: To terms of stability, you can always stick with the version you're using. In terms of quality, since Linux has no financial interest in which way development goes, he'll do what he thinks is technically correct. He won't release a product-level until he thinks it's ready.

CW: What about software?

KESSIN: All four of the big database vendors have announced a Linux version — I have Sybase and Informatica already, a colleague has Oracle. ... Netraque has a Linux version of its server.

Alternatives' choice

Small, budget-minded companies are also using Linux. One is Natural Alternatives International (www.nai-online.com), a vitamin maker in San Marcos, Calif., which had sales last year of about \$80 million. Of its 125 employees, 75 are computer users. Alan Harnett is the company's computer administrator; Brent Belisle, its systems consultant.

CW: What led you to Linux?

HARNETT: The desire for E-mail. We've been using NetWare 4.11 for file and print serving and decided it was time to also provide E-mail, both within the company, and to the Internet.

We looked at a couple of packages ... Microsoft [Exchange], Novell [Groupwise and Lotus Notes], but they had a very steep learning curve. [Linux had] a combination of performance, cost and ... what looked like the right E-mail server that would run on it. We're using Caldera Inc.'s Open Linux right out of the box, and for E-mail, the sendmail package that comes with the bundle.

BEISLE: It would have cost us about \$5,000 for a 50-user Exchange license, plus the license for NT, vs. \$339 for Caldera's Open Linux, which also lets us connect to a NetWare Server — even manage our Novell users from it.

HARNETT: One reason for going with Caldera is that their flavor works with Novell NetWare. It connected right through our IPX/IP gateway. It was very easy to get installed. We had a consultant come and help us because we didn't know anything about Linux.

BEISLE: It's very easy and intuitive to administrate. And it just runs: no blue screen of death, no kernel panics. We put an [Uninterrupted Power Supply] on it and never touch it except to do administrative things. It's now been running for over a year and a half.

CW: What about tech support?

HARNETT: We use a Unix expert at an [Internet provider] in San Diego. We've called them a few times, mostly to tighten up some of our security.

CW: Any other interesting benefits to using Linux?

BEISLE: We use AT&T Corp. at



our [Internet provider]. Since we're in California, and their domain servers are in New Jersey, we also set up the Linux box to be our own domain server. This has improved response time for our users' Internet activities.

I don't understand why [more] people don't look at this Linux. For a few hundred bucks, somebody could get Linux and sendmail ... there's a tremendous amount of power, stability and security, which I don't think NT offers.

We don't have to manage it. We just make sure the electricity stays on. It just plain works.

Silver screen

Daryl Strauss is manager of software development at Digital Domain (www.dd.com), the Venice, Calif., visual effects studio that has worked on such films as *Titanic*, *Dante's Peak* and *What Dreams May Come*. Its quiver holds about 300 Silicon Graphics Inc. (SGI) workstations and 200 Alpha-based systems from Digital Equipment Corp. and Laguna Hills, Calif.-based clone-maker Carrera Computers Inc. — not to mention up to 5T bytes of disk storage.

CW: How long have you been using Linux?

STRAUSS: We've been running Red Hat Linux since December 1996 on 40 to 105 of our Digital Alphas, depending on the workload.

CW: Why are you using those machines, and why Linux?

STRAUSS: [One of the special effects services] we do is "rendering" — computing new images. It's basically batch processing. It's very computation-intensive — but it's also so embarrassingly easy problem to distribute. All our

workstations are on our network, and I have a scheduling system which has access to all the machines. As machines become available, they grab the next frame, etc.

[Work for] *Titanic* included [much] complex rendering and a process we call "compositing" — putting together separate graphic elements into a single image. So we decided to see what platform would give us the best price/performance. We already owned roughly 30 Alpha workstations that were running NT. We loaded Linux on a few of them to test its feasibility for our applications.

Because we wrote the compositing software in-house, we could bring it up on a variety of platforms. So we had three choices of operating systems: [Digital] Unix, Linux or NT. NT had some issues for us. We're primarily an SGI shop. NT is used for a desktop system, and it fills a niche by running certain applications. [But] the problems we had to tackle for *Titanic* didn't fit the niche NT served.

We could have used [Digital] Unix — it's a reasonable operating system — but at 100 boxes, the licensing costs become an issue. At the time, Digital Unix retailed for \$5,000 a copy. So instead, we bought one copy of Red Hat Linux for \$39.95. We knew Linux worked and knew that even if it would need engineering work — and we knew it would — a month of my time would be cheaper than buying 100 copies of [Digital] Unix. One reason we bought Red Hat's Linux is that they have a release that runs on the Alpha. Not many Linux vendors have that. O

Derr is a writer and speaker in Newton Centre, Mass. He can be reached at dderr@world.std.com or www.derr.com.

cation, what kind of industry they're working in," says Bonnie Helton, director of information technology at Johnson Smith LLP, a law firm in Indianapolis.

CLIMBING THE LADDER

Helton herself worked up through the ranks, from secretary to paralegal to network administrator and finally, to her current position. She knows she makes less than IT managers at other companies. But her response to that is pragmatic: She's aware she has no formal degree or other training in the field, a situation she believes other self-taught IT professionals should take into account when comparing their salaries with those of people with graduate degrees in computer science or other formal study.

The fact that Helton has steadily been granted higher salaries, as well as added recognition for her contribution to her company, is good news, she says. It has taken many nontechnology companies — and perhaps law firms in particular — this long to understand the significance of IT, she says. "So it's excellent news that more companies are finally acknowledging how important we are."

Part of the problem may be that although dollars are being forked over in fairly large quantities, the amount of labor — and responsibility — that goes with the typical IT job makes it seem to many like a poor deal.

"I make a huge contribution to my company, and I work somewhere from 45 to 60 hours a week," says a net work analyst at a manufacturing company who prefers to remain anonymous. "Even if the 'average salary' numbers I'm seeing are \$10,000 higher than reality, I'm still not being paid enough."

Lin believes there is a sharp division between salaries offered to IT workers with just one or two years of experience, and those quoted to professionals with more than five or six years.

"How many years you have under your belt matters quite a bit," Lin says. But he also says that many companies out there have unrealistic notions of the employment market. "They just don't understand that if they want to get good experienced people, they will have to pay a lot more," he says.

LIVING ON THE EDGE

The news is slightly better when it comes to getting the chance to work with new technology. Most are satisfied that they're getting their hands on enough of the latest gadgets (both hardware and software) to keep their skills fairly current.

Even better was the fact that em-
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WHO'S CRYING NOW?

For companies worried about IT staff retention, here's a look at salary satisfaction for IT job titles (ranked from most dissatisfied to most satisfied):

JOB TITLE	SATISFIED	NOT SATISFIED	DON'T KNOW
Programmer/analyst	22%	62%	16%
Manager of network support	22%	57%	21%
Director of network services	22%	44%	34%
Technical specialist	23%	63%	14%
Help desk operator	25%	75%	0%
Computer operator	25%	38%	37%
Network administrator/analyst	26%	69%	5%
Director of IS operations	27%	61%	12%
Programmer/developer	27%	51%	22%
Manager of technical support	28%	72%	0%
Database analyst	28%	48%	24%
Manager of client/server computing	33%	54%	13%
Director of technical services	33%	42%	25%
Computer operations manager	36%	45%	19%
Systems programmer/Unix administrator	44%	56%	0%
Systems analyst	45%	37%	18%
CIO/vice president of IS	50%	42%	8%

Survey base: 576 IT professionals

VENDOR JOBS MAY BOAST LESS DISSATISFACTION

IT professionals at vendor companies:

JOB TITLE	SATISFIED	NOT SATISFIED	DON'T KNOW
Testers/quality assurance professional	21%	50%	29%
Customer-support professional	21%	50%	29%
Junior-/intermediate-level developer	24%	52%	24%
Manager of customer support	27%	60%	23%
Software engineers/developer	30%	54%	16%
Pre- and post-sales systems engineer	45%	45%	10%
Software architect	47%	35%	18%

Survey base: 330 IT professionals; only titles with sufficient response rates are shown

IS THE JOY OF CONSULTING OVERHYPED?

IT professionals at consultancies:

JOB TITLE	SATISFIED	NOT SATISFIED	DON'T KNOW
Management consultant	20%	65%	15%
Senior consultant	38%	50%	12%
Entry-level consultant	39%	43%	18%
Research associate	44%	56%	0%
Senior partner	90%	10%	0%

Survey base: 386 IT consultants; only titles with sufficient response rates are shown. Percentages have been rounded to the nearest whole number

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COMPUTERWORLD'S ONLINE **Salary** SATISFACTIONSURVEY

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players are trying to shake work environments more flexible to create more "life-friendly" workplaces.

And IT employees say they would take less cash in favor of a reduced workload or more flexibility about scheduling. Indeed, this has turned out to be the No. 1 hot button for IT workers, many of whom feel not so much underpaid as overworked and tied to a job that makes having an outside life difficult.

"There are a number of things I would accept in lieu of extra money. Some flexibility on my hours, for example. Or more vacation time — I only get two weeks," says Gina Sanfilippo, MIS manager at San Francisco-based public relations firm Blanc & Otis.

And in general, IT employees feel they have quite satisfactory relationships with their managers (statistically speaking, this was the brightest news the survey turned up). Regardless of what part of the IT industry they work in, approximately two-thirds of IT workers say they have good relationships with their bosses.

TRAINING IS KEY

Still, getting enough training remains on most IT employees' hot list. Even though many received hands-on exposure to new technologies, most would like to be put through courses of study — preferably those offering accreditation — that go beyond tinkering with a new product in their spare time.

For precisely those reasons Ryan Smith went job hunting last year. Smith was an experienced Novell networking consultant at a midsize Salt Lake City IT consulting firm. And he was increasingly dissatisfied that management failed to understand how critical it was that he keep his skills honed.

"I was pretty much expected to keep up with new technologies myself," Smith says. Now the IT manager at Fairbanks Capital Corp., also in Salt Lake City, Smith jumped when a client offered him what Smith calls "an offer I couldn't refuse." And the fact that he has much more generous training opportunities was key.

"It's critical for anyone in today's market," Smith says. He believes that IT employees would be willing either to forgo salary increases or sign contracts stipulating their agreement to stay for a certain period of time, if they will be guaranteed a certain amount of training.

Flexibility is also key. "Although I have a much higher salary in my current position, I joke that I still get \$4.45 an hour, because I put in so much over."

Pay stubs, page 89

HOW IT PROFESSIONALS FEEL ABOUT THEIR PAY AND BENEFITS

While their responses vary depending on what environment they work in — user companies, vendors or as consultants — all three groups are dissatisfied with their compensation packages

Given the current conditions in your local job market, do you feel you're adequately compensated for your job responsibilities and your experience?

	USERS	VENDORS	CONSULTANTS
Yes	28%	29%	38%
No	55%	49%	47%
Don't know	13%	16%	11%
Not answered	4%	6%	4%

How satisfied are you with your total salary (base pay plus bonuses)?

	USERS	VENDORS	CONSULTANTS
Very satisfied	4%	7%	9%
Somewhat satisfied	23%	21%	22%
Neither satisfied nor dissatisfied	27%	30%	30%
Somewhat dissatisfied	28%	23%	23%
Very dissatisfied	14%	13%	9%
Not answered	4%	6%	7%

How satisfied are you with the opportunity to receive performance bonuses and the amounts of those bonuses?

	USERS	VENDORS	CONSULTANTS
Very satisfied	3%	5%	6%
Somewhat satisfied	11%	11%	10%
Neither satisfied nor dissatisfied	18%	21%	21%
Somewhat dissatisfied	21%	20%	24%
Very dissatisfied	40%	34%	29%
Not answered	7%	9%	10%

How satisfied are you with nonmonetary recognition of your job performance from management?

	USERS	VENDORS	CONSULTANTS
Very satisfied	9%	9%	10%
Somewhat satisfied	20%	20%	22%
Neither satisfied nor dissatisfied	30%	30%	29%
Somewhat dissatisfied	18%	23%	20%
Very dissatisfied	17%	12%	11%
Not answered	6%	6%	8%

How satisfied are you with the availability of training at your company?

	USERS	VENDORS	CONSULTANTS
Very satisfied	16%	14%	15%
Somewhat satisfied	23%	25%	21%
Neither satisfied nor dissatisfied	24%	25%	22%
Somewhat dissatisfied	18%	17%	18%
Very dissatisfied	14%	13%	15%
Not answered	5%	6%	9%

Percentages have been rounded to the nearest whole number.

IT CAREERS

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COMPUTERWORLD'S ONLINE Salary SATISFACTIONSURVEY

CONTINUED FROM PAGE 87

time," Smith says. "IT employees work hard for their money."

What are the lessons to be learned from this?

First, the media and recruiters need to be more careful when publishing average salaries for technology positions. Such compensation varies widely according to region, industry and experience of applicant, and headhunters and journalists must be wary of fueling unrealistic expectations.

COMPLACENCY MEANS TROUBLE

But employers shouldn't be complacent, either. There's a clear message being sent by the rank-and-file IT workers: If you can't up the salary ante, at the very least provide more bonuses based on performance, such as stock options or other one-time remuneration offers.

You also need to pay attention to your employees' desires to keep their skills current. That means offering training, training and more training. Otherwise, you're going to have a revolving door as your IT employees continue to search for better positions.

Perhaps most important, you can be more sympathetic toward the work/family balancing act of today's workers by providing options such as flexible scheduling, telecommuting or comp time. Most IT employees have emphasized that they work in a demanding, stressful profession that makes it difficult to separate work and home life. Most IT workers told Computerworld that typically they wear company-provided beepers after hours in case of emergency.

At a state transportation agency office in St. Louis, attrition due to overworked and underpaid IT workers became such a problem that management was forced to re-evaluate salaries. They had to raise many IT employees' compensation by more than 35%, says a senior network analyst at the agency. He's quite happy with his adjusted salary. But he says managers need to be aware that money isn't everything. "The stress can be very high," he says. "There are many ways that management can be more sensitive and retain good employees." □

LaPlante is a freelance writer in Woodside, Calif.

MORE ONLINE

For more information from the Online Salary Satisfaction Survey, which is exclusive to our Web site, visit Computerworld online.

www.computerworld.com/salary

How satisfied are you with the opportunity for advancement at your company?

	USERS	VENDORS	CONSULTANTS
Very satisfied	5%	7%	11%
Somewhat satisfied	17%	24%	21%
Neither satisfied nor dissatisfied	31%	29%	29%
Somewhat dissatisfied	24%	22%	20%
Very dissatisfied	18%	13%	11%
Not answered	5%	5%	8%

How satisfied are you with the opportunity to work on leading-edge technology projects?

	USERS	VENDORS	CONSULTANTS
Very satisfied	18%	19%	20%
Somewhat satisfied	30%	30%	30%
Neither satisfied nor dissatisfied	23%	23%	21%
Somewhat dissatisfied	15%	12%	14%
Very dissatisfied	10%	11%	9%
Not answered	5%	5%	6%

How satisfied are you with the ability to be flexible in job scheduling?

	USERS	VENDORS	CONSULTANTS
Very satisfied	23%	32%	26%
Somewhat satisfied	36%	32%	31%
Neither satisfied nor dissatisfied	20%	16%	20%
Somewhat dissatisfied	10%	9%	11%
Very dissatisfied	5%	5%	5%
Not answered	6%	6%	7%

How satisfied are you with your working relationship with your manager?

	USERS	VENDORS	CONSULTANTS
Very satisfied	29%	28%	23%
Somewhat satisfied	34%	33%	33%
Neither satisfied nor dissatisfied	17%	18%	21%
Somewhat dissatisfied	10%	11%	9%
Very dissatisfied	5%	3%	5%
Not answered	5%	7%	9%

How satisfied are you with your understanding of the IS/business mission?

	USERS	VENDORS	CONSULTANTS
Very satisfied	20%	23%	23%
Somewhat satisfied	40%	35%	40%
Neither satisfied nor dissatisfied	24%	23%	19%
Somewhat dissatisfied	7%	11%	7%
Very dissatisfied	4%	3%	3%
Not answered	5%	5%	8%

How satisfied are you with the opportunity to discuss career goals with your manager?

	USERS	VENDORS	CONSULTANTS
Very satisfied	11%	14%	20%
Somewhat satisfied	23%	26%	21%
Neither satisfied nor dissatisfied	27%	24%	28%
Somewhat dissatisfied	22%	20%	13%
Very dissatisfied	11%	10%	10%
Not answered	6%	6%	8%

Percentages have been rounded to the nearest whole number.

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REGIONAL SCOPE Boston

CHEERS TO THE CONSULTANT

By Leslie Goff

IF YOU'RE AN EXPERIENCED IT CONSULTANT, BOSTON IS A TOWN WHERE EVERYBODY WANTS TO KNOW YOUR NAME. EVEN IF YOU AREN'T VERY EXPERIENCED, DEMAND IS SO HIGH THAT COMPANIES WILL BE GLAD YOU CAME

With its plethora of hardware manufacturers, software developers and health care and financial services firms, Boston is thirsty for help.

"The amount of work an information technology consultant can get in Boston is limited only by how much work the consultant wants," say veteran contractors and staffing agency executives.

With the one-two punch of European Monetary Union (EMU) and year 2000 staring the large base of financial services firms in the face, and a copious amount of high-tech product development going on, consultants usually can secure a new gig before the current one ends.

"The YaK problem is sucking up so many people that anyone can find a job in this market," says Larry Bressler, an incorporated independent consultant doing business as L. B. Resources Inc. in Newton, Mass. He's been consulting in the area for 10 years.

Skills shortages exist across nearly all technical specialties, from enterprise resource planning software implementation to client/server applications development to databases to mainframe and networking, says Tomasz Schellenberg, president and CEO of Adopt Inc., a 15-year-old agency in Framingham, Mass. He says he has noticed that his clients have become more flexible in their requirements — if a consultant has four of the five desired skills, companies will hire him and provide on-the-job training.

COMPETENCE CITY

Although there may not be enough consultants to fill all the openings, talent is overflowing in the area. "The level of competence here is probably higher than anywhere else in the country other than Silicon Valley," Bressler says. An abundance of highly qualified professionals from local schools such as Harvard Business School and MIT make the area very stimulating, locals say.

In fact, the long-term benefit of being exposed to talented mentors is worth considering when seeking a local consulting position, says Don Walsh, president of Seek Consulting Group Inc. in Wakefield, Mass. "We have a lot of extremely bright people who are tremendous sources of knowledge. Ask who else is on the team and how the team is organized," he advises. "That could have a major impact on you, and as you move into the top 20% of developers, you can earn higher rates."

Agencies and independent consultants offer slightly different views on area consulting rates. Walsh quotes hourly rates of \$40 to \$75 for electronic-commerce jobs, \$45 to \$65 for year 2000 projects, \$50 to \$70 for client/server applications development, \$40 to \$55 for systems and network administration, \$40 to \$60 for database applications development and \$65 to \$85 for database architects.

Schellenberg says average hourly rates are \$65 to \$90, but they can go as low as \$50 to \$65 for mainframe projects and as high as \$85 to \$100 for advanced technologies.

TOP TECHNOLOGY SKILLS FOR CONTRACTORS AND CONSULTANTS OF BOSTON AREA	
SKILL CATEGORY	TOP SKILLS
Internet development tools	Java, JavaScript
Languages	C++, Visual Basic, COBOL
Development tools	Prolog, Visual Basic, COBOL
Networking	Novell, Windows NT, LAN
DBMS and RDBMS	Oracle, Microsoft SQL Server
Operating systems	Windows, Linux
Internetworking	Novell Netware, Windows NT
LAN	Novell Netware, Windows NT
Office/E-mail/groupware	Novell Netware, Windows
Client/server applications	Novell Netware, Windows
System software and support	Novell Netware, Windows

Source: Computerworld Annual Skills Survey, November 1998

Independent consultants quote rates that are higher than agency rates: \$75 to \$100 per hour for consultants with a proven specialty. They say agency mark-ups are typically 25% to 40% more than what the consultant is paid.

SECURITY IN NUMBERS

Consultants say they don't foresee any downturn in demand over the next few years, even with the uncertainty in the stock market. Though the Boston metropolitan area was hit hard by the recession in the early '90s, local IT consultants say they aren't likely to suffer that way again if the economy makes a repeat performance.

"This is a strange time that we're living in now because, in the past, consultants were the first to go when there was a slowdown," says Noah Kaufman, managing partner of New World Design in Cambridge, Mass., a group of four independent incorporated consultants. "That

has changed now because companies have a lot of technology projects that they have to get done regardless — like YaK conversions, EMU conversions and new E-commerce initiatives."

Because client/server development projects have siphoned off a lot of mainframe veterans eager to work with newer tools such as C++ and Visual Basic, area companies have ample roles to fill on their millennium projects, notes John Kuczyński, a partner in the independent firm BPT Consulting Associates in Londonderry, N.H., and past president of the Boston chapter of the Independent Computer Consultants Association. "If any other aspects of development work start to wane, those consultants would just help fill the YaK void," Kuczyński says. "The YaK problem is not going to go away. Demand for consultants looks strong until 2001 at least." □

Goff is a freelance writer in New York.

Snapshots

Top industries, top skills, top projects

TOP INDUSTRIES

Financial services and banking, software development, telecommunications equipment manufacturing, hardware manufacturing, insurance, retail, utilities

TOP SKILLS

SAP, PeopleSoft, Oracle Financials, Bean, Oracle database, C++, Visual Basic, Java, Web technologies, TCP/IP, Windows NT, Unix

TOP PROJECTS

Year 2000, European Monetary Union, ERP implementations, electronic commerce, network design and support, client/server application development

IT CAREERS MIDWEST

TALENT IN ART

- Sr. PeopleSoft Programmers
- Oracle DBAs
- Oracle Forms 5.0 Developers
- PowerBuilder, SQL, C++ Developers
- Sybase DBA, Sun Solaris, Unix Scripts
- Visual Basic 5.0 Access Developers
- PIA, COBOL, DB2, CICS
- PIA, AS400, COBOL, RPG
- PIA, COBOL, IMS
- PIA, ADABAS, NATURAL, COBOL
- PIA, COBOL, DB2, SQL, JCL
- BSA Financial Services Investment Industry Experience

Software

- Web Developers, NET Dynamics, HTML, CGI, Active Server Pages, Active-X
- Web Developers, NET Dynamics 4.x, Java, Java Scripts, HTML
- Web Developers, Java Scripts, PERL, SQL, HTML
- Web Developers, ASP, SQL Server, Java or VB Script
- Sr. Java Developers, ObjectShare, Java Scripts, HTML
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The Week in Stocks

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Company	Price	% Chg
Amazon.com Inc.	38.00	+1.0
AT&T	36.75	+0.5
Comcast Corp.	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5

Losers

Company	Price	% Chg
Amazon.com Inc.	38.00	+1.0
AT&T	36.75	+0.5
Comcast Corp.	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
Comcast Corp. (H)	27.00	+0.5
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INDUSTRY ALPHABET

MCI WorldCom's ride

The merger of MCI Communications Corp. and WorldCom Inc. looked perfect at several points during the year it took to accomplish. U.S. and foreign regulators were concerned about the new company's size and scope, and the companies had to stick their interest holders to pass muster.

But now, four months after the deal on Sept. 14, MCI WorldCom Inc. (NASDAQ:WCOM) looks like a powerhouse, the darling of analysts and investors. Third-quarter results for the joint venture, which announced a \$2.5 billion, double the \$1.5 billion WorldCom hit in last year's third quarter. Net income was \$44 million, up from \$46 million.

Several analysts say the stock is a Buy or a Strong Buy. They point to the success MCI and WorldCom have had combining their voice and data networks — a major concern of large business customers when the merger began.

"I think it is a Buy recommendation for the next two quarters, even though it is pricey at \$37 (see chart)," says Eric Melnik, an equity analyst at Argus Research Inc. in New York. "They are probably one of the best telecom companies in the world right now."

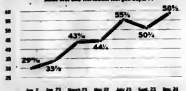
Karen M. Moore, an analyst at BT Asset, Brown Inc. in New York, says he places the stock in the blue-chip category, suitable for long-term investors.

One publicity grabber for the new company is its local-carrier service, an on-line network that allows even last-carrier service on the Web. But, more important to its success is its investment strategy abroad, market watchers say.

"The major problem for the company are the level of their European penetration and their development of networks in Latin America," Melnik says. MCI WorldCom in August purchased the Rio de Janeiro-based carrier Embraer Participações SA (NYSE:EMT). — Matt Hamilton

ON THE RISE

WorldCom's stock has been on a steady climb since MCI and WorldCom merged Sept. 14



Nov. 25 (Wk. Nov. 26) Nov. 26 (Wk. Nov. 27) Nov. 27 (Wk. Nov. 28) Nov. 28 (Wk. Nov. 29) Nov. 29 (Wk. Nov. 30)

Company	Price	% Chg
ADN	52.00	+0.5
ADN	52.00	+0.5
ADN	52.00	+0.5
ADN	52.00	+0.5
ADN	52.00	+0.5
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ADN	52.00	+0.5
ADN	52.00	+0.5

Nov. 25 (Wk. Nov. 26) Nov. 26 (Wk. Nov. 27) Nov. 27 (Wk. Nov. 28) Nov. 28 (Wk. Nov. 29) Nov. 29 (Wk. Nov. 30)

Company	Price	% Chg
ADN	52.00	+0.5
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KEY: (1) = New annual high reached in period (2) = New annual low reached in period

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Utilities juice up

CONTINUED FROM PAGE 1

critical survival issues.

"Each utility is at a different stage, but with deregulation, these power and energy providers have to find ways to improve customer service and enter new business segments with a minimal investment and cost," said Dennis Hoover, an IT manager at Baltimore Gas & Electric Co.

Utilities also are spending slightly more — 2.6% of annual revenue — on IT than their counterparts in other industries, whose IT spending averages 1.4% of revenue.

But don't look for the industry's traditional mega application development projects or monolithic enterprise software systems. Instead, the trend is toward building smaller, more flexible systems for marketing, billing and other operations, then integrating those as new deregulated lines of business evolve.

"I see no lack of appetite to spend money, but utilities say if they're going to spend \$100 million [on IT], they want to do it in \$5 million and \$10 million, bite-size chunks," said Chris Al-

ford, a vice president in the utilities practice at American Management Systems Inc., a Fairfax, Va.-based systems integrator.

"Very large projects tend to fail, and they're scared of those," Alford said. That necessarily means more systems integration projects, which one out of two North American utility companies pegged as a top priority in the CSC survey.



In an outage, GIS will help utilities identify affected customers, says Jim Origliasso

Given the need for state-of-the-art customer service, billing and other systems, Michael Weiner, CSC's utilities and energy expert, said he expects

a significant increase in utilities' reliance on IT outsourcing and systems integrators. "We think the market is going to take a dramatic shift [to outsourcing]... driven by competition in the utilities market," he said.

Baltimore Gas & Electric Co., for example, has integrated its billing system and an electronic commerce application to provide online energy usage and billing information to its large commercial customers.

In Oregon, the Eugene Water and Electric Board is integrating

its SCT Corp. banner customer information system with a geographical information system so it can match equipment, such as transformers and power substations, to the individual customers they serve.

"For every piece of equipment, we will have a list of customers and their phone numbers. In the case of a power outage, this would allow us to identify exactly who is affected and act proactively," said Jim Origliasso, the utility's director of financial services.

HELP ON THE WAY

South Hydro Electric Co., which serves 100,000 customers in rural Maine, used just such an integrated system to pinpoint which of its customers had their power knocked out during last winter's devastating New England ice storms.

Providing better customer service is also driving systems integration projects at big, investor-owned utilities and their new, deregulated energy services companies.

"When customers have a choice and you're selling a commodity, which is what power and gas is, customer service becomes much more important," Weiner said.

Customer retention is also important because utilities on the whole are highly sensitive to fluctuations in volume.

"If you lose 5% of your customer base, the impact on profits is a lot more than that,"

Staffing rises as critical issue

The need to find, train and retain IT personnel has made a headline in this No. 1 spot on IT executives' list of critical issues. The staffing issue had never risen higher than fifth in the annual survey, conducted by the Waltham, Mass.-based Consulting Group, a subsidiary of CSC.

Also gaining ground on the IT agenda were organizing and using data and electronically connecting with partners, suppliers and customers. Indeed, 30% of North American IT executives listed the Internet as one of the five most critical emerging technologies their companies will adopt between now and 2005.

Electronic commerce, network security, groupware and knowledge management technologies rounded out the executives' list of key emerging technologies.

Of the 215 North American IT executives surveyed, 86% said their companies had put up a Web site, yet most said their companies didn't use them effectively. For example, 64% of respondents said their sites provided only static information and offered customers no way to order or pay for goods and services.

On the budget front, 68% of North American respondents expected an increase in their IT budget, compared with 61% last year. The top investment areas this year were human resources, hardware, and software and application development/maintenance.

Other IT issues making it to the top 10 were capitalizing on advances in IT, integrating systems, implementing cross-functional systems and updating obsolete systems.

Worldwide, CSC interviewed 595 IT executives for its 1998 survey. Of those, 215 were from North America and represented all industries. — Julia King

Weiner said.

Put another way, "If utilities don't have the information they need to attract and retain customers, they're going to be toast once deregulation hits," said Mark Shirman, a vice president at Cambridge Technology Partners Inc., a systems integrator in Cambridge, Mass.

Alarmingly, year 2000 turns up nowhere on utility IT executives' list of critical issues.

"Most utilities think they have year 2000 reasonably under control," Weiner said. But he also noted that systems involved in the generation and distribution of power typically aren't under the CIO's control. Utility IT executives, for the most part, are responsible for back-office systems and administrative systems exclusively. □

Tech jargon affects case

CONTINUED FROM PAGE 1

two words recently.

"Yet there is little agreement even among computer experts on what these terms mean (see chart). As one chief technology officer with 20 years in the industry noted, 'The distinctions are rather soft. I don't know that there's a tight consensus on the terminology.'"

Whether Microsoft should be allowed to ship two products — Internet Explorer and Windows — together is one of the central issues in the case.

Though the Justice Department says Microsoft illegally bundled, or tied, its browser and operating system together, the vendor contends the products are inextricably integrated.

Of course, Microsoft critics say that's the nut of the issue — Microsoft regularly and perhaps illegally absorbs once-separate applications into Windows in

Is it a bundle or a bundle?

Even the computer industry disagrees on the meaning of "bundle."

Bundle: Software that comes free with the purchase of new hardware

— Computer Company High-Tech Dictionary. www.computec.com/high-tech/dictionary/dictionary.html

Bundle: A product that comes packaged with another product for free, often from another vendor; when you buy two or more products for a single price

— Jargon: An Informal Dictionary of Computer Terms. Prentice Hall, Berkeley, Calif.

order to perpetuate the Windows hegemony. Besides the Internet Explorer browser, Microsoft also has added, for example, disk compression utilities — once an applications market unto itself — into Windows.

Before Jackson can decide the case, he will have to form definitions for the key terms, then determine whether and how Microsoft's behavior compares. That's where a special master would have helped, said Robert Lande, an antitrust professor at the University of Baltimore. A special master is a court-appointed expert who can weed through competing arguments to present a trusted report to the judge.

To define bundling vs. integration without an adviser, Jackson might "draw the line at where it is relatively easy or hard to take the finished [product] apart," explained Yee Wah Chin, an antitrust lawyer at Squadron, Ellenoff, Plesent & Shenfield

LLP in New York.

In other words, if Internet Explorer can be easily separated from Windows without damaging either product, it could be called "bundled." If the browser can't be extracted from Windows without chaos, it could be dubbed "integrated."

But Jay Westermeyer, a lawyer at Fenwick & West LLP in Washington, had a more nuanced definition of integrated software. He said it's a set of code that "can't operate by itself" and needs to be run with another set of code.

In that case, Internet Explorer could be considered both bundled and integrated with Windows because Microsoft also offers it as a separate product that can be downloaded from the Internet, said Westermeyer, a past president of the Computer Law Association in Washington.

But Jackson is also required to consider legal precedents that pertain to the tying of products, namely the U.S. Supreme Court

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case Jefferson Parish Hospital District No. 2 v. Hyde, Lande noted.

Among the criteria in that case are whether there is a separate consumer demand for the two products in question, whether the products are ever sold separately and whether they were built separately, Lande said.

"If he's confused, the judge will err on the side of caution and go with Microsoft," Lande speculated.

Among industry rivals, however, the definitions of bundling and integration may be simple, said Jeff Tarter, editor of "Softletter," in Watertown, Mass. "Bundling is what the competition does. Integration is what you do," he quipped. □

The Back Page

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Ever delete a file you didn't mean to and even empty it from the Recycle Bin? Save Butt is a Windows utility that, working in the background, automatically

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Computerworld INDEX

Executives who say E-mail would be more productive if they could type better: **30%**
Major Web sites that fail to answer customer E-mail within five days: **42%**
Messages the SEC gets per day reporting possible Internet stock frauds: **120**
Predicted number of Internet users in China in 2002: **9.4M**
Americans worried that banks wouldn't keep their personal lifestyle information confidential: **79%**
CEOs who expect to be involved in a major merger or acquisition within 14 months: **53%**

Sources: 1. Latin Communications, New York; Jupiter Communications Inc., New York; Securities and Exchange Commission, Washington; International Data Corp., Framingham, Mass.; 2. Bank Street, Boston; 3. Citicorp, Cleveland

THE FIFTH WAVE by Rich Tennant



* Sales on the Web site are down. I figure the servers are so loaded, so we're frozen around the legs in the computer room, and if that doesn't work, I'll just get a chair that should do it.

Inside Lines

Filtering and the holiday cheer

With Thanksgiving over, it's now officially the Jingle Bells season. But there will be fewer dancing reindeer and exuberant Santas in cyberspace this year if Adgore Inc. has anything to say about it. The Dayton, Ohio-based E-mail censorer will provide free content filtering to help companies block the profane holiday-related videos that make the rounds this time of year. But before your heart gets too close to big, be warned that there's a fee for the service—about \$65 per month—after Jan. 15.

Facility in, quality out

IT departments—long the domain of fast food, job cuts and vending-machine snacks—are now moving up the food chain. Some shops are beginning to order healthy meals for IT workers leaving the midnight oil, according to Gerard Walsh, vice president of Special Recruitment Inc., a Whitehouse, N.J., company that helps IT departments recruit employees. "It's no longer just plain," Walsh said. For instance, Walsh said his company has arranged for workers at some client sites to select healthier meals from gourmet grocery stores.

Speaking of food

The busy holiday shopping season is exactly the wrong time to be dabbling with new E-commerce technologies, says David Fry, director of Fry Multimedia in Ann Arbor, Mich., which does Web work for companies such as Eddie Bauer Inc. "We like to put a caution on all major development efforts after the beginning of October," Fry said. Web, usually, anyone. Another major Fry client, 1-80-Flowers Inc., unveiled its revamped Web site in mid-November. Then, Christmas isn't on big for the florist business—Mother's Day and Valentine's Day both surpass it. But Fry was off a bit despite about the broken rule of thumb. "It's the timing wrong. You shouldn't eat so much fried chicken, but you do," he laughed.

That's entertainment, Y2K-style

For it was your jeans bags and services, then your 2000 trunks and T-shirts. Now get ready for the movies. Next fall Y2K: The Movie will star Chris O'Donnell (bitten from the Summer movie) as a New York programmer who comes across dangerous information just before midnight on Oct. 31, 1999. Your 2000 guest Peter de Jager and Ed Verheyn signed on as consultants for the Warner Bros. flick to make sure it's realistic. Fortunately, other studios working on Y2K-disaster movies have no such scruples: one reportedly will have a Boeing 747 crashing into the Empire State Building as its systems fail.

Soundboard

John Burroughs, CEO of Cascade Designs in Seattle, on consultants who disrupted Canada's rollout of packaged financial and manufacturing applications last week: "You wish you ate months [of installation] that you fly a switch and everything just jumps, but that's not the case." ... The New York Journal, in its new video, A Christian's Guide to the Millennium Bug: "Y2K may be God's instrument to shake this nation, to humble this nation." ... Brian Cassin, a spokesman for the British Y2K group Yorkshire 2000, quoted in the London Times on your 2000 disaster movies: "It hasn't even been around for the sequel in the year 2000."

Compaq and Hewlett-Packard have jumped on the direct-sales-over-the-Web bandwagon, and now it's IBM's turn. Trouble is, Big Blue isn't quite clear on the build-it-yourself concept. Sure, you can select exactly the components you want at www.ibm.com. But what does the Web site generate? A list of standard IBM configurations that approximate what you wanted. News editor Patricia Keefe knows exactly what she wants—your news tips and tidbits. E-mail her at patricia.keefe@cw.com or call (508) 850-8183.

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